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THE SIGNIFICANCE OF SEXUAL DIFFERENCES IN SIZE AMONG BIRDS

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(*Read November 14, 1958*)

THE egg cells of animals are large, yolk-filled, nutritive, inactive; the sperm cells small, active, and without reserves of stored food. This disparity in the basic sex cells tends to be reflected in the size of the animals themselves. Females of many spiders, insects, fishes, and some amphibians such as toads (*Bufo*) are larger and heavier-bodied than the males. An extreme is the deep-sea angler fish of the family Ceratiidae in which the tiny male attaches himself to the body of his vastly larger mate and in time becomes little more than a parasitic appendage. All his organ systems, save only the reproductive, degenerate.

In the higher vertebrates, including some reptiles, and especially birds and mammals, the situation is reversed and the male is usually the larger of the two sexes. The reason for this will be considered later, but first we may mention one family of birds, the hummingbirds (Trochilidae), in which the male is the smaller sex in many of the species. In the ruby-throated hummingbird, *Archilochus colubris*, of eastern North America, for example, the length of the wings (an index to size) averages 38.5 millimeters in the males and 44.5 in the females. An interesting corollary of this size disparity, demonstrated by Mr. Crawford H. Greenewalt, is that the smaller males average 55 wing beats per second as compared with 50 in the females.

In most birds, however, as already stated, males are larger. Darwin (1874, here cited from a 1922 edition), in his *The Descent of Man and Selection in Relation to Sex*, published a great deal of information on sexual dimorphism. His explanation of the superior size of the male in most species of higher vertebrates, including birds, was that the males compete with one another for mates. In this struggle those that are larger or stronger than the average will have an advantage. They will secure more mates and leave more offspring. In so far as their larger size is hereditary it will be preserved by natural selection. In other words, the larger size of the males of most birds and mammals is an adaptation. This explanation by Darwin is accepted to the present day, and the present review seeks only to marshal further evidence in its support and to discuss certain exceptions.

Even among insects, contrary to the general rule, the male is larger than the female in a few species in which the males do contest with each other for mates. One of these is the Hercules beetle, *Dynastes hercules*. As Dr. William Beebe (1947) has shown, the male of this species seeks to grasp his rival, raise him aloft, and crash him against the ground. Successful in this, he may then sometimes pick up the much smaller female bodily and carry her away from the scene of conflict.

Among birds the male is larger than the female in most species, including all those comprising certain families. In a considerable number of species the sexes are alike in size. The remaining species—those in which the female is the larger—are, as noted below, confined chiefly to a few families.

In some species in which the male is the larger as shown by skeletal or other measurements, the difference is very slight, so much so that in the laying season the female may temporarily weigh more than the male. Eaton (1957) has given an example in the wood warbler genus *Seiurus*. In most species the size differential is somewhat greater—five to ten per cent—and it may be much more.

Assuming, as implied above, that when males contest for mates those of superior size are favored, how is this selection translated genetically into increased size of the males only? One might expect that most mutations will not be sex-linked and will affect both sexes equally. But each species occupies its own particular ecological niche, and selective factors will usually prevent pronounced changes in size in either direction. Variation is only permissible within limits, and one may suppose that the advantages to the males of greater size outweigh the disadvantages, whereas in the females they do not. In other words, greater size becomes a secondary

sexual character of the male, and the genetic and hormonal background may be assumed to be similar to that involved in other types of secondary sexual dimorphism.

In birds of polygamous or promiscuous mating habits, the size dimorphism is often greater than in monogamous ones. As an example of the extent of size dimorphism in some polygamous species of birds, one may cite the following. In the eastern wild turkey (*Meleagris gallopavo silvestris*) large hens weigh about fourteen pounds; gobblers up to twenty-five, or almost twice as much. Comparable differences exist in such species as the great bustard (*Otis tarda*), some of the larger pheasants, and in a few other groups. In the capercaillie (*Tetrao urogallus*), largest of the grouse, the male weighs more than twice as much as the female.

In these families the larger species often show relatively greater sexual size dimorphism as well as greater development of other secondary sexual characters than do the smaller ones. Rensch (1950) has discussed this. In the grouse (Tetraonidae) some of the smaller species like the ptarmigans (*Lagopus*) are monogamous, the larger species such as the sage grouse (*Centrocercus*) highly polygamous or promiscuous.

The following average weights of European grouse, taken from Hagen's (1942) excellent study, will show how dimorphism increases as the total size becomes greater:

	Males	Females
Hazel grouse (*Tetrastes bonasia*)	369 grams	370 grams
Rock ptarmigan (*Lagopus mutus*)	519 grams	421 grams
Willow ptarmigan (*Lagopus lagopus*)	584 grams	517 grams
Black grouse (*Lyrurus tetrix*)	1,269 grams	945 grams
Capercaillie (*Tetrao urogallus*)	4,230 grams	1,985 grams

Among the songbirds, the blackbirds and orioles (Icteridae) may be cited as a family in which the smaller species are usually monogamous or partly monogamous and show only moderate size dimorphism, while the larger species are polygamous and show greater dimorphism. Selander (1958) has published data to illustrate this.

It is not difficult to understand why polygamous or promiscuous species should show a greater degree of size dimorphism. In such species each successful male will have several mates. It is not necessary that there be as many males as females. The former are, to a degree, expendable. Hence adverse selective factors as regards increasing size will be less stringent in polygamous species. Eventually, to be sure, counterselection will become operative and put a check on increasing size. In the great bustard (*Otis tarda*) or the wild turkey (*Meleagris gallopavo*), for example, the size of the males is now approaching the upper limits at which flight is possible, at least in ground-dwelling birds.

There is some evidence that, in such highly dimorphic species as turkeys, pheasants, and others, the males are more vulnerable than females to certain predators and also to climatic extremes. To be sure, in some of these species the vulnerability of the adult males is increased by the fact that they also have ornamental plumes which make them conspicuous or encumber them in flight. Their courtship displays and their fights with other males also tend to expose them to enemies, though at other seasons they may be shyer than the females. In some of them the male sheds his ornamental plumes during the nonbreeding season; in others he does not.

An illustration of the fact that increased size may be hazardous is provided by a study (Stein, 1950) of mortality in the European mole (*Talpa*) during an unusually severe winter. The largest individuals in this instance suffered the greatest inroads from cold or starvation.

Why the smaller species of such families as the grouse (Tetraonidae), bustards (Otididae), and quails and pheasants (Phasianidae) should show less dimorphism and be less polygamous or even monogamous in their mating habits is a moot question. There is no similar trend in birds of paradise (Paradiseidae), manakins (Pipridae), or hummingbirds (Trochilidae), which have extreme dimorphism and promiscuous mating habits.

Perhaps in such families as the grouse (Tetraonidae) or bustards (Otididae) there is a tendency towards highly polygamous or promiscuous behavior—a tendency which, for little understood reasons, can find fuller expression in large species than in small ones.

Among a few genera or groups of songbirds (Oscines) one can also find examples of increase of sexual size dimorphism in the larger species. I have compared the Hawaiian forms *Loxops virens* and *Hemignathus obscurus*, and also the West African sunbirds *Cyanomitra newtoni* and

Dreptes thomensis (Amadon, 1950: 187–189; 1953: 447). In both instances we are dealing with rather peculiar insular types, and in both instances dimorphism in bill size and length outstrips that of general size, as reflected in wing length. Whether the selective factors involved concern primarily the bill or the general size is unknown. Indeed, some nonselective allometric factors may be involved, as suggested by Rensch (1950) for somewhat similar instances.

Today, however, the feeling is that allometric interpretation must be rejected. Kramer has championed this point of view. Offhand, however, it does not seem impossible that the ontogenetic growth trends responsible for sexual size differences of adults might be continued phylogenetically to some extent in rapidly evolving insular forms subject to a minimum of competition and predation from other species.

As an example of great dimorphism in a songbird lacking, so far as known, any marked peculiarities of mating behavior, one may cite an Australian grassland species, *Cincloramphus cruralis*. It is somewhat like a lark (*Alauda*) in habits, but its exact affinities among the songbirds are in doubt.

Serventy and Whittell (1951: 302) give the weight of the male as 2½ to 3 ounces, that of the female as 1 ounce. This is the greatest difference known to me in any bird. Weights of five specimens from Queensland in the American Museum of Natural History suggest a slightly lesser, though still a great difference. They are, in grams: 2 males, 65 and 68; 3 females, 28, 32, and 32.

Among polygamous land mammals such as cattle, sexual size dimorphism, though pronounced, is less than in the extremes among birds. In some aquatic mammals, however, notably the highly polygamous northern fur seal (*Callorhinus ursinus*), the male may weigh six times as much as the female.

We may now consider birds in which the female is the larger of the two sexes. There are a number of families—rheas (Rheidae), tinamous (Tinamidae), emus (Dromaeidae), cassowaries (Casuariidae), phalaropes (Phalaropodidae), painted snipe (Rostratulidae), jacanas (Jacanidae), button-quail (Turnicidae), and some of the sandpipers (Scolopacidae) in which the female is not only larger than the male, but often more brightly colored. In all of them, apparently, the female plays the dominant role in courtship. The male, on the other hand, performs the incubation and takes care of the young, so that one is tempted to apply the anthropomorphic term "hen-pecked" to him.

As an example of this reversed role of the sexes in courtship, one may cite an incident observed and photographed by Mr. Cleveland Grant. An incubating Wilson's phalarope (*Steganopus tricolor*) flew from the nest, presumably to feed. He was immediately mobbed by three ardent females of the species and forced to alight and take refuge on the ground.

In the button-quail (*Turnix*) the females are so aggressive and pugnacious that, as noted by Darwin (*op. cit.*, 487), they were kept by the natives of India for fighting, like gamecocks.

In the painted snipe (*Rostratula*) the female has the trachea, which is associated with the (courtship) notes, more convoluted than in the male, a unique situation among the few birds in which dimorphism occurs in this structure.

In the groups mentioned there is thus a complete reversal of much of the behavior associated with reproduction and, with it, of the secondary sexual characters including size. In other words, the females are larger because they, not the males, compete for mates.

The basic reason or reasons for the reversal of the behavior seem to be undiscovered. In shore birds (Scolopacidae) other than the phalaropes and painted snipes, all stages of incipient reversal may be observed, but without providing a clue as to the selective advantages. Indeed, the shore birds are perhaps the most interesting family of birds as regards sexual size dimorphism ranging, as they do, from species in which the female is dominant and larger to others such as the pectoral sandpiper (*Erolia melanotos*) in which the male is much the larger, or even to one, the ruff (*Philomachus*), in which the larger, highly dimorphic males gather on a display ground or *lek* like some grouse.

Beebe, Hartley and Howes (1917) and Beebe (1925) studied the breeding habits of various tinamous in British Guiana. Roosevelt (1917: xi) summarized their findings, as regards a small tinamou of the genus *Crypturus* [= *Crypturellus*] as follows:

> its nesting habits are extraordinary, for the male makes the nest, stays with it until he can persuade a roving female to drop an egg in it, and then hatches the egg and rears the chick, while the female goes off; and as soon as the chick is fairly grown the male finds another temporary mate of advanced feministic views.

Beebe (1925: 202) estimated that in one of the small species involved, *C. variegatus*, males outnumber females by four to one. He found a male incubating an egg but still accompanied by a three-fourths grown chick, which he had presumably just reared. On the other hand, the polyandrous female is believed to court and to lay an egg for several (how many is not known) different males. In view of this unbalanced sex ratio, the polyandrous habits and reversal of parental care are probably adaptive. This is the more true since, as Skutch (1949: 434) has suggested, one of the possible advantages of a small brood size in the tropical jungle is to reduce the toll taken by the many predators which are attracted by successive visits to a nest, or by the calls of a parent bird keeping a brood together.

Nevertheless, in a larger tinamou (*T. major*) of the same region, although the male incubates and cares for the young, the clutch size is 6 or 8 and the female may not be polyandrous.

Mayr (1939) has shown that birds of peculiar mating habits such as *Crypturellus variegatus* are apt to have unbalanced sex ratios. The sex ratio is adapted by natural selection to the breeding habits of the species, or may be in some cases.

The button-quails (Turnicidae) are also said to have polyandrous mating habits similar to those of the small tinamou, though the female lays more than one egg for each of her successive mates.

It is now known that in several woodpeckers (Picidae), both New and Old World, the male assumes an increasing share and sometimes all of the care of the young as they grow older. It would be interesting to study the family to determine whether such behavior is in any way correlated with degree of sexual dimorphism. Cursory examination of the measurements provided by Ridgway (1914) for the North American species indicates that the male is usually slightly larger than the female, but that the reverse may be true in some of the sapsuckers (*Sphyrapicus*) and perhaps of the ivory-bills (*Campephilus*, *Scopaneus* [= *Phloeoceastes*]).

In the genus *Centropus* of the cuckoos (Cuculidae) the males are smaller than the females and are believed to perform the incubation. The sexes are alike in color.

There are a few other groups or families of birds in which the female is the larger sex, but for reasons that are unknown or disputed. In all of these the male is the more brightly colored (when there is a difference) and is the more active of the sexes in courtship. Hence the reason for the reversal of size is obviously different from that in the families just discussed. Among the songbirds, Oscines, which include more than half of all the species of birds, the female is larger perhaps only in a few aberrant flowerpeckers (Dicaeidae) of the genera *Melanocharis* and *Rhamphocharis* (Mayr and Amadon, 1947: 13–14). In *R. crassirostris*, in which the distinction is greatest, the wing of the male averages 66 mm., that of the female 73. The male is the more brightly colored of the sexes, in *Melanocharis* at least, as in other dicaeids. Nothing is known of the life histories of these birds that provides a clue as to the reasons for the reversal of the size in the sexes.

As noted earlier, the female is also larger than the male in some species of hummingbirds. It may be that in these tiny creatures speed and maneuverability are more important to the males than size or strength. The same might be true of some small fishes in which the males are—like those of hummingbirds—small, brilliantly colored, and pugnacious.

Another group of birds in which the males are usually smaller than the females is the birds of prey: the Falconiformes (hawks, eagles, etc.), the Strigiformes (owls), the predatory group of gull-like birds Stercorariidae (skuas), and the Fregatidae (man-o'-war birds) which are piratical relatives of the pelicans. In most species of these unrelated groups the female exceeds the male in size, but for reasons largely unknown the extent varies from species to species, sometimes even within the same genus. In the common barn owl (*Tyto alba*), for example, the sexes are of about the same size, but in the closely allied grass owl (*T. capensis*) a mated pair from Luzon, Philippine Islands, collected by the author weighed: male, 360 grams; female, 582 grams. The male thus weighed only 62 per cent as much as the female. In those species in which the sexes differ in color the males are usually more colorful or, at any rate, further removed from the primitive immature type of coloration than are the females. In some crested eagles the smaller male has the longer crest. An example is the Japanese hawk-eagle, *Spizaëtus nipalensis orientalis*. In one hawk, *Accipiter fasciatus vigilax*, for which I happen to have compiled data (Amadon, 1943: 168), 10 males averaged 269 grams; 5 females, 477 grams. Thus the dimorphism is as pronounced as that

of the opposite type found in such birds as turkeys.

Several theories have been advanced as to why the females of birds of prey are larger, but none is very convincing. Schmidt-Bey (1913: 414) made a suggestion similar to that proposed above for hummingbirds: namely, that male birds of prey fight in such a way that maneuverability and speed in climbing above an adversary are more important than strength. Instead of fighting it out on the ground in the manner of gamecocks, they seek to spiral above one another in the air and then to make passes at each other with the talons. It is doubtful, however, whether this is true of all the birds of prey—some owls, for instance—in which the female is the larger.

In some birds of prey the female stays at the nest more or less constantly after the young hatch, and the male brings food for both his mate and young. It has been suggested by several writers (e.g., Brüll, 1937, quoted in Hagen, 1942) that the lesser size of the male better fits him for securing the smaller creatures that are fed to the newly hatched nestlings. Later, when the young are approaching full growth, the adult female becomes active in the foraging and will, on the average, secure larger prey. It is difficult to say whether this explanation is valid. The female is certainly capable of tearing up larger prey for the young, though perhaps smaller prey is more suitable.

Hagen (1942: 148) in his perceptive study of this question has made another suggestion, one which had also occurred to me. In birds of prey the foraging instincts and the parental instincts are more or less in conflict. It is said, for example, that, if the young of the great skua (*Catharacta skua*) chance to leave the nest, which is on the ground, when they are small, their parents may kill and eat them as they would any other prey species. Hence the male of birds of prey, in which the parental instincts are weaker than in the female, may represent a threat to the young especially when they are small. The larger and fiercer female stays with the young and prevents cannibalism from becoming prevalent—it already is known to occur from time to time.

In any event, the reversed size dimorphism in birds of prey seems definitely to be correlated with their predatory habits. In all three nonpredatory, vulturelike or scavenging relatives of the birds of prey—namely, the Old World vultures (members of the same family Accipridae as the hawks), the New World vultures (Cathartidae), and the caracaras (members of the falcon family Falconidae)—the dominant size of the female has disappeared to a greater or lesser degree along with the predatory habits. Indeed, in some of them, such as the South American condor (*Vultur*) and the griffon vulture of Europe (*Gyps*), the male is the larger. Yet it is very probable that all three of these groups of scavengers are derivatives of typical birds of prey.

Professor Erwin Stresemann has pointed out to me that the dimorphism in the birds of prey is greatest, perhaps, in two bird-catching groups of different families; namely, the accipiters, already cited, and some of the falcons, such as *Falco peregrinus*. On the other hand, in some of the largely insect-eating falcons such as the kestrel (*Falco tinnunculus*), the superiority in size of the female is much less. It is doubtful, however, whether there is any real correlation with bird-catching. The harpy eagle (*Harpia*), for example, certainly does not catch birds in flight; yet the female is much larger than the male. Likewise in the owls (*Tyto*) mentioned above, the Philippine species, like *T. alba*, feeds mostly on rodents.

The frigate or man-o'-war birds (Fregatidae) would repay study as regards sexual dimorphism. The male is smaller than the female and more brightly colored, with his scarlet gular sac, which is inflated in courtship. These characteristics suggest comparison with the true birds of prey. But the male frigate bird is said to perform most of the incubation and care of the young, which one would not expect.

SUMMARY

Sexual size dimorphism in birds, as first stated by Darwin, is believed to be based on selection for increased size resulting from competition for mates, usually by males but with some outstanding exceptions.

The dimorphism is greater in polygamous and promiscuous species, because here the males need not be as numerous as females and, hence, more extreme secondary sexual characters can be tolerated.

Many unexplained examples or aspects of sexual size dimorphism among birds are known, and several of them are cited in this paper. Their study and analysis may be expected to

provide further instances of the sensitivity of the organism to natural selection.

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THE PREDICTION OF SEX: FOLKLORE AND SCIENCE[1]

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MAN has attempted from earliest times to foretell the sex of the unborn child. Chance gives specious support to almost any of the scores of methods for prediction; the ratio of sexes at birth of course would permit approximately fifty per cent accuracy if half of a large enough series of births were foretold as male and half as female. The superstitions relating to the prediction of fetal sex illustrate in fascinating manner the credulity and skepticism of mankind, its bondage to tradition and its flights of rationalization and imagination.

A method of the early Egyptians is the oldest of which we have record. The Great Berlin Papyrus is believed to have been written in 1400–1600 B.C., but probably was copied from an earlier document dating from the Old Kingdom, 3000–4000 B.C. (71).[2] This ancient writing suggested (Prescription 199) that a mixture of dates and sand be placed in two flasks. To one flask was added barley or spelt; to the other, wheat. The grains had previously been soaked in the urine of the pregnant woman. If the wheat sprouted first, a son would be born; if barley, a girl (34, 71, 98). Many centuries later, Galen recommended the same test (51), and more than 1,500 years after Galen this method was included in Paulini's incredible *Dreckapotheke*.[3] Paulini interpolates, "Women are always anxious to know whether they are pregnant or not—item, whether to hope for a boy or a girl. If the doctor can give no reliable information, they have little respect for his skill" (66).

In 1933 a German pharmacologist repeated the Egyptian test on 100 urine specimens from an equal number of pregnant women (59). With 23 samples the germination rates of the two kinds of seed were the same. On the basis of differential growth rates of seeds in the remaining tests, 19 diagnoses were wrong and 58 were correct. No further evaluation of the old method appears to have been published.

Hippocrates (460–357 B.C.) described both tests and physical signs whereby fetal sex could be determined (35, 53). He believed that boys develop on the right side of the uterus (i.e., on the warmer side of the body), and girls on the left. Therefore, he said, if the fetus were a boy, the right eye of the mother would be brighter and clearer and her right breast would be larger and of a particular shape. In addition, her complexion would usually be clear. If the unborn baby were of the opposite sex, the mother's left eye would be larger and brighter, the left breast larger, and she would probably have a freckled face.

Pliny the Elder contended that a woman pregnant with a boy has a better color and that his fetal movement begins on the fortieth day. If her baby is to be a girl, however, the woman moves with difficulty, her legs are swollen, and movements of the fetus are not felt until the ninetieth day (54). Soranus, who lived in the second century, quotes (with some amplification) Hippocrates' physical signs, as well as others, but scorns them as unreliable and untrue in what is perhaps the earliest recorded skepticism regarding the prognosis of fetal sex (45, 89). Galen (A.D. 131–201), however, whether or not aware of Soranus' rejection of the Hippocratic theory, seems to have fully accepted it (51). The authority of Hippocratic and Galenic tradition was enough to establish firmly the acceptance of the diagnostic signs by later generations.

In the sixth century, Aetios of Amida, Court Physician of the Emperor of Byzantium, Justinian I, compiled most of the then current and recorded medical knowledge. He listed the Hippocratic signs with approval, and added that a male fetus is more active and that its mother's blood vessels, particularly those under the tongue, are enlarged (73). Moschion, a contemporary of Aetios and a commentator on the writings of Soranus, on the other hand, rejected the Hippocratic diagnostic signs as without value (45). Mahomet (570–632), it is said (96), endorsed an expanded list of the signs, as did Rhazes,

[1] Part of the material for this paper was collected in London with the support of a grant from the Wellcome Trust, whose generous assistance is gratefully acknowledged.

[2] Numbers in parentheses indicate references at end of article.

[3] I have summarized elsewhere (38) theories as to how this bit of ancient Egyptian lore made its way into the eighteenth century.

Arabic medical writer of the ninth century (72), and Trotula, renowned woman physician who wrote and practiced at Salerno two hundred years later (60). The signs were recommended (among other diagnostic criteria) in the eleventh century by the authors of Anglo-Saxon manuscripts (21); in the thirteenth century, by Albertus Magnus (3), Bernard de Gordon (41), and Michael Scot, astrologer in the court of Frederic II of Hohenstaufen (83); in the fourteenth century, by Manoello, a Roman-born poet (69); in the sixteenth, by such medical writers as Rösslin (78), Rueff (79), Pinaeus (68), Bonaciolus (14), and Roche (75). Hans Sachs (42), shoemaker, *Meistersinger*, and poet, outlined in verse "Sixteen Signs Whether a Woman is Pregnant with a Boy"; the attribution of the signs is to Rhazes, but the Hippocratic criteria are included. The embryologist Fabricius reported that the female horse develops on the left side of the mare, thus endorsing the ancient Greek theory (1).

But there were skeptics too. In the sixteenth century a certain Joubert (49) agreed with Hippocrates that a woman who will bear a son has a better color and a brighter eye, but pointed out, sensibly, that, as the human uterus has only one chamber and is located on the midline, the developing infant cannot lie either on the right or the left. Although Joubert's book was designed to condemn *Erreurs populaires au fait de la medecine et regime de santé*, he nevertheless speaks with approval of certain methods alleged to make possible the prediction of sex. Ambroise Paré (57), too, accepted the tests based on the Hippocratic theory that each sex develops on its own side of the body, adding rather uncharitably, "The male infant is more excellent and perfect than the female, maintaining the authority and pre-eminence which God gave him, appointing him as chief and lord over the female." Culpeper's *A Directory for Midwives*, published in 1653 (23), also outlined the Hippocratic tests, as did such medical writers as Brousse (4), Dufour (18), and the pseudonymous Aristotle (7) in the following century.

It is not surprising, then, that relatively recent studies of folklore likewise reveal the Hippocratic dicta, unrecognized but little changed, to have been widely accepted as popular methods for the prediction of sex in northern (10, 11, 92), central (33, 37, 52, 88), and southern Europe (40, 50, 69), China (61, 64), India (28), and Sumatra (47). The Andaman Islanders who, after all, could scarcely have heard of Hippocrates, distinguished themselves by deciding that the movements of the male fetus are felt on the *left* side (16). A British physician made the same claim as late as 1891 (77), disagreeing with a colleague (58), who reported that, during several years, every male child but one in whose delivery he participated had "been most prominent upon *right* side of mother while every female has been upon *left*."

Various extrapolations were made from the belief that males and females develop on opposite sides of the uterus. There was a Chinese superstition that if, after the seventh month, the right hand of the fetus pushed against the left side of the mother, it was a boy; a girl's left hand would be felt against the mother's right side (61). Not explained was how the mother could recognize which hand she felt! Theodorus Priscianus, a Byzantine physician of the fourth century, suggested, ". . . let her [the pregnant woman] stand with her feet together, and if in walking she moves the right foot first she will have a male child; if the left, a female" (97). The same test was later quoted by Constantine the African (22) and others. Variants were to observe on which foot the woman stepped, or which hand she used to assist herself, when she got out of bed, or up from a sitting position; whether, when called by someone standing behind her, she turned right or left; which hand she used to pick up a key. These criteria appear both in early medical texts (7, 23, 41, 42, 75, 79, 83) and in recent compilations of folklore (9, 28, 44, 69, 88, 90, 96, 100).

If the mother's abdomen were larger and more rounded, or more prominent on the right, or if it were enlarged chiefly in its upper portion (European superstition) or lower portion (South Sea superstition), a boy would be born; if the reverse were observed, a girl.[4] The mother was expected to be agile, comfortable, gay and of less finicky appetite if the fetus were a male (but, according to East Indies belief, to be surly if it were a boy); if a girl were to be born, each maternal characteristic would be the opposite.[4] As recently as 1878 the placenta was said to lie on the left of the uterine fundus if the fetus were a girl and on the right if a boy; fifteen supporting cases are tabulated by the reporting physician, who nevertheless seems not quite convinced (91).

[4] A very widespread group of beliefs, repeated for centuries; see references 2, 3, 7, 10, 14, 21, 23, 28, 40–42, 46, 47, 52, 55, 61, 67, 69, 72, 74, 75, 78, 79, 88, 90, 99.

Hippocrates had stated that usually the female fetus begins to move in four months but the male, because he is stronger, in three (53). The "Father of Medicine" did not, however, suggest this alleged difference as a method of sex determination. Pliny the Elder (54) contended that fetal movement begins on the fortieth day for the male and the ninetieth day for the female. The Talmud taught that the male fetus is completed in 41 days, the female in 81 (70), but does not specify that movements begin at these times. In the thirteenth century Bernard de Gordon declared that the male moves at three months and the female at four (41). Ambroise Paré (57) expected male movements at three and a half months and female movements later, while other sixteenth-century writers simply quoted the Hippocratic figures (14, 79).

A reliable indication that the fetus is a male, according to Aetios of Amida, is to discover that the pulse is stronger and more rapid in the woman's right wrist than in her left; if the reverse is true, a girl is to be expected (73). No doubt this superstition, which also existed in China (28, 64), had much earlier origins. The sign is recorded in medical writings of the thirteenth (41) and sixteenth centuries (14, 42, 79). An exchange of courtly letters between two French physicians in 1771–1772 set forth their arguments as to how, in the light of Chinese medical doctrine, the pulse should be palpated and interpreted in order to predict sex. The two doctors seem to have disagreed as to whether a stronger pulse on the left indicated boy or girl (4, 5, 15).

In the middle of the nineteenth century Frankenhäuser stirred new interest in this technique by claiming, in a paper delivered before the Obstetrical Society of Berlin, that a more rapid fetal pulse (an average of 144 or more a minute) during the last trimester of pregnancy foretold that a girl would be born, while a rate of 124 or less per minute signified a boy (18, 39). Such a distinction, said he, permitted predictions *mit grosser Sicherheit*. Other physicians tried the method; some, but not all, were convinced (20, 24, 30, 55, 62, 82, 86, 93). Modern opinion does not support Frankenhäuser's contention (18, 29).

In France and Hungary a delayed delivery was considered a sure indication that the tardy baby was a boy (88, 100).

Sometimes the credulous depended on crude tests, unscientific predecessors of modern laboratory procedures, rather than on physical signs. A sixteenth-century method was to mix pulverized birthwort root with honey and apply it on a pessary of wool. If the woman's saliva became sweet, she could expect a son; if bitter, a daughter (14, 79, 80). Obviously this method, like many others, not only had no basis in fact but was highly subjective. Paulini (66) simply examined the saliva: if it were yellow or red and viscous, it indicated a male; if white and watery, a female. A modern saliva test, although much more refined, appears not always to be reliable (31).

Galen suggested that parsley be placed on the woman's head without her knowledge; if thereafter she first spoke to a male, it meant that she would have a son (51). Priscian (fourth century) (97) and Constantine the African (eleventh century) (22) approved of this method, but Joubert (49) listed the test among the *erreurs populaires*. A recent variation uses salt in place of the parsley (9).

It is a curious fact that none of the medical writers mention dreams as indicators of fetal sex. On the other hand, of course, dreams often had great significance for the credulous layman. In Russia, when a pregnant woman dreamed of a fountain or spring she expected a girl; of a knife or hatchet, a boy (25). A dream that the stone fell from a ring forecast the birth of a son but also his death (46). Dreams of the death of a pregnant woman, or of a knife or ax, were in Europe another indication that the unborn child was a male (69, 88), while in India the same meaning was attached to dreams of lotus blossoms and mango trees (28). To Maori natives the dreams of the father are significant; human heads or skulls decorated with *kotuku* plumes mean a boy, while *huisa* feathers signify a girl (69). In Southeast Asia, when the pregnant woman has dreamed of a number, she and her female friends sit up for as many successive nights as the number indicates, awaiting the cry of a bird or beast. If the cry is heard by all present, it indicates, depending on the direction from which it comes, whether the child will be a boy (from the right) or girl (from the left). Should the sound be heard from in front or behind, disaster threatens the baby. In this case the husband is quickly summoned to drive away the animal or bird. If thereafter the sound comes from left or right, the child is safe (85). In Albania the croaking of a raven or the

nocturnal crowing of a rooster presaged the birth of a boy, while the cry of an owl told the mother that she would have a daughter (9). As Hovorka and Kronfeld suggest, girls could scarcely have been welcome; the owl's call was also an omen of impending death (46). On the other hand, in Dalmatia the owl's screech foretold a boy (17).

A gracious test of ancient England was simply to offer the woman a lily and a rose. For her to select the lily foretold that her unborn child was a boy, while the rose indicated a girl (21). If, as seems likely, she knew the significance of the flowers, then no one could blame her for so pleasantly expressing her preference for a son or daughter.

Sometimes it could be learned from one child what the sex of the next would be, for example, by whether the baby first learned to say "Papa" or "Mamma" (9, 19, 88, 100), according to a superstition widespread in Europe. To cut the umbilical cord with a knife meant that the next child would be a boy, while use of a scissors bespoke a girl (9). Or the sex of the next child would be that of the first person encountered by the mother following her initial attendance at church after childbirth (9, 19, 65, 100). If she met no one she would have no more children! A somewhat similar practice in Hungary was for the woman to put a distaff from the spinning room in her mouth and step into the street. The sex of the first person she saw would be that of her unborn child (88). In Saxony the woman thrust a wand of wood into the yarn on a weaver's bench, then sat on the bench and looked into the street to learn whether she would first see a woman or man (69).

A famous test required a drop or two of "milk" (actually colostrum) from the pregnant woman. The drops were allowed to fall into water; if the "milk" then dissolved and dissipated, a daughter would be born, but if it floated on the surface, a son could be expected. Thus was the test prescribed by Aetios of Amida in the sixth century (73). Trotula said that either "milk" or blood from the right side of the body could be used, but gave the opposite interpretation from the signs. If the drop sank, the fetus was male; if it floated, female (60). Johannes de Kethan's *Fasciculus medicinae*, a rare incunabulum, included the test (the "milk" should fall into urine) (36), as did works of the sixteenth century and later. Disagreement continued as to the meaning of the sinking *versus* the floating drops (7, 23, 66, 75). The procedure, also known to Jewish folklore (90), was in effect a crude test of specific gravity. In a variant described by Michael Scot, the "milk" of the pregnant woman was simply examined: if thick, it signified a boy, but if watery, a girl. Or, says Scot, the liquid could be allowed to dry on a mirror or other smooth surface; if the resulting mass were compact, a male was indicated, but if the drop had spread, a girl (83). A similar test had much earlier been proposed by Hippocrates (53). A sixteenth-century authority advises

> But if ye be desyrous to know whether the conception be man or woman: then lette a droppe of her mylke or twayne be mylked on a smoothe glasse/ or a bryght knyfe/ other elles on the nayle of one of her fyngers/ and yf the mylke flewe and spredde abrode upon it/ by and by then is it a woman chylde: but yf the droppe of mylke contynue and stande styll uppon that/ the whiche it is mylked on/ then is it syngne of a man chylde (78).

The test evidently had a considerable vogue (14, 49, 66, 75, 79). Variants were known in the folklore of Asia as well as Europe (44, 47, 50, 67, 76, 90, 92, 99). Hippocrates himself had suggested that a dough be made with the "milk" and meal. The dough was then to be baked on a slow fire. If the cake burned, a boy could be expected; if it cracked open, a girl (53). Rhazes mentioned the same procedure (96).

Should a woman's urine be stored for several days and then be found to contain "louse-like" particles, she was pregnant. If the particles were red, her child would be a boy; if white, a girl. Thus one Antonio Guainerio, who died in 1440 (43). Both Rueff (97) and Paulini (66) also suggest this test.

An egg has been used to foretell sex. Livia, wife of the Emperor Nero, was, according to legend, so curious to know whether her unborn child was a boy or girl that she hatched a chicken egg in her bosom. The results were a cockerel and a son, Tiberius (12). The anecdote perhaps sprang from the notion that the male influence of the fetus could be transferred to the egg as it incubated close by. A Transylvanian gypsy woman might break an egg into a bowl of water, then squirt water from her mouth into the bowl. Next morning she expected a daughter if egg and yolk were together but a son if they had separated (69).

Divination was employed, as in the case of the medicine man who bathed his eyes with a magic drug and then saw the future in a calabash

full of water, or who pinched a leaf cup of water and predicted a boy if the water squirted out (44). Obviously the soothsayer could exercise his professional discretion and make a prediction that would please his client. It was a Slavic practice to study carefully the disembowelled carcass of the hog slaughtered for the Christmas feast. Soft fat meant a girl; lumpy fat, a boy. In this case, the interpretation was made by the men and women of the community (69). Similarly, in the South Sea Islands the husband killed a young pig, removed the heart, and at the same time looked for an artery with a thickened wall. If he found it, he rejoiced in the prospect of a son (74). A practice at Czech weddings was to give the bride a blunt knife, with which she cut a piece from a loaf. The piece she threw behind her. If it had more brown crust than white, she would have a son first; if the reverse, a daughter (46).

Other tests were less open to arbitrary interpretation. In Brittany it was a custom to throw a boy's shirt and a girl's shirt into the miraculous fountain of Saint Idunet or Saint Gonval. If the girl's shirt floated longer, the child would be a girl, and *vice versa* (9, 100). An Albanian practice was for the husband to slip over his thumb the esophageal sphincter of a hen, noting the diameter of the muscular ring. The latter was then soaked for half an hour in warm water. If it were unchanged, a girl would be born; if it had contracted, a boy (46). A startling Moroccan superstition involved dropping a louse on the pregnant woman's exposed abdomen. If the insect landed on its legs, the fetus was believed to be a male; if on its back, a female (8). A Hungarian woman might simply make a hole with her finger in a spider web; if the spider repaired the damage, a son was expected (88). She would also await a son if she discovered that she had burned a long hole in her dress or apron, while a round hole meant a daughter (88).

The Malays cut betel nuts in pieces and threw them like dice to foretell the sex of the unborn child (95). In Central Europe, if a bit of the expectant mother's fingernail crackled when she dropped it on glowing coals, or if she found a needle (rather than a pin), she expected a girl. Or, early in pregnancy, she could dip a silver coin in holy water and place the coin on the big toe of her right foot. If the coin fell off to the right when she moved, a son was indicated, and *vice versa* (88).

In China the wondering mother might resort to numerology. Calculations were based on her age and the phase of the moon when she became pregnant. With one formula, if the answer were an odd number she would have a son; if even, a daughter (26, 32, 61). It must be admitted that this method, at least, pays homage to the laws of chance. Sex prediction in Japan was also based on numerology (44).

If the Lapps of long ago saw a star above the moon, they predicted a son, while a star below signified a daughter (87). In Touraine, to see a new moon within six days after a baby was born foretold that the next child would be of the same sex; if after more than six days, of the opposite sex. Or the crucial intervals might occur during the first and the last two quarters of the moon (92, 99). Such beliefs perhaps derived from mythology, for Lucina, the goddess of light and of childbirth, was sometimes identified with the moon goddess, Diana.

François Mauriceau, shrewd obstetrician of the seventeenth century, derides the superstition that a child conceived when the moon is waning will be a girl; when waxing, a boy:

> One can readily satisfy the curiosity and unrest of women who wish to know whether they are pregnant or not, but there are many who wish that one would . . . say whether it is boy or girl. This is absolutely impossible, although there is hardly a midwife who does not claim to divine it. Actually, it is better to guess it than to foretell it, because when [the prediction] materializes, it is assuredly more by chance than science or reason. . . . But one is sometimes so pressed and importuned to express an opinion, chiefly by women who have never had children, and also by their husbands, who are no less curious, that one is obliged to satisfy them on the matter as best one can, by consideration of some very uncertain signs.

After discussing and criticizing as fallacious a number of familiar signs, Mauriceau continues,

> . . . if the midwife knows that one desires a boy, she will assure one that it is a boy, and that she would swear to it, and if it is a girl that one wants . . ., she will say the same, and that she would wager it is a girl. If, by good luck, matters turn out according to her prognosis, she will not fail to say that she knew it very well, but when chance reverses her prediction, she gains a reputation for ignorance and presumptuousness.

The canny obstetrician adds that if *he* were the midwife he would do just the opposite, forecasting a boy if a girl were wanted, and *vice versa*.

For if by chance the midwife predicted correctly, as could happen, [the parents] will say that she is a clever woman, and foretold correctly, and if it happens otherwise (as it will one time in two), the wife and her husband, having what they desire, will take little heed, as one always accepts cheerfully the good that comes unexpectedly (63).

A few other skeptics also raised their voices. The chief midwife of Augsburg, Barbara Widenmannin, for example, spoke her mind in 1735 in no uncertain fashion—"But whether a woman is pregnant with a little boy or little girl, no one knows but God alone" (94). Nonetheless, there were always the credulous, and always a method that was supposed to be reliable.

As learning advanced, more refined techniques based on scientific rationale and controlled laboratory tests were proposed, but still they had a disappointingly high margin of error (see Blakely for review—13). Recently, however, one method has emerged which does seem to be dependable. This involves the application of the nuclear chromatin test to cellular debris of fetal origin in the amniotic fluid. The fluid, obtained by direct aspiration from the amniotic sac, is centrifuged, and the cells desquamated from the fetus are stained and examined for the presence or absence of the nuclear chromatin mass which is predictive of female sex. The test can be applied as early as the thirteenth week of pregnancy and has proven highly reliable (6, 27, 48, 56, 81, 84). After at least four thousand years of effort, the goal has been achieved. How the predictions, now that they can be relied on, will make themselves useful remains, as a *Lancet* editorial points out (6), to be seen.

Thus the record of man's constant, driving curiosity to know the sex of the unborn child. Of course he need wait only a few weeks or months to have the indisputable answer. But curiosity, in ancient Egypt as now, has little patience; then and now, man has foretold the future as best he can.

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KARYOLYSUS SONOMAE N. SP., A BLOOD PARASITE FROM THE CALIFORNIA YELLOW-LEGGED FROG, *RANA BOYLI BOYLI*[1]

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DURING the summer and early fall of 1958, eleven *Rana b. boyli* were collected from Dutch Mill Creek, Sonoma County, California. Examination of the peripheral blood showed the presence of extracellular and intra-erythrocytic haemogregarine-like parasites in five of the hosts. Sections and tissue impressions of the viscera indicated that the parasite underwent schizogony in endothelial cells and hence should be considered a species of *Karyolysus*. To the writer's knowledge this is the first authentic report of a species of this genus to be recorded from any group but the Reptilia; previous reports from the Amphibia have been based, in the main, upon the morphology of the parasite in the peripheral blood and were not confirmed by demonstrating the vertebrate life cycle.

The genus *Karyolysus* was established by Labbé (1894) to include those intra-erythrocytic sporozoans capable of fragmenting the nucleus of the host-cell. Reichenow (1921) found that this lytic activity was of uncertain generic worth; he did, however, demonstrate that the parasite could be distinguished from other haemogregarine-like species on the basis of the life cycle in the vertebrate host where schizogony occurs in endothelial cells and the resulting merozoites, following their penetration into erythrocytes, develop into gametocytes.

MATERIALS AND METHODS

Infections were determined by staining thin smears of peripheral blood with Wright's stain, and, more detailed observations were made following Giemsa's stain. Sections of viscera (liver, spleen, kidney, lung and heart) were fixed in alcohol-formalin-acetic acid, stained with Heidenhain's iron haematoxylin and cut 15 microns in thickness. The writer wishes to acknowledge the aid of Mr. William von Meyer, College of the Pacific, who aided in the collection of the hosts.

[1] This investigation was supported by a grant from the Johnson Fund of the American Philosophical Society.

The following description, unless otherwise stated, is based upon haematoxylin stained smears, impressions and sections.

Karyolysus sonomae n. sp.

Diagnosis: Blood inhabiting Sporozoa whose schizogony occurs in endothelial cells of the spleen. Typically, four and, rarely, eight elongate merozoites are produced. Free merozoites, which are found in the plasma of the internal organs and in the peripheral blood, penetrate erythrocytes and develop into sausage shaped gametocytes.

Host: Rana boyli boyli.

Location: Dutch Mill Creek, Sonoma Co., Calif.

Parasitize: Circulatory system.

PARASITES OF THE PERIPHERAL BLOOD

Parasites occurring in the peripheral blood can be placed into two general groups: (1) extracellular merozoites and (2) intra-erythrocytic developing and mature gametocytes.

The elongate, slender merozoites (fig. 1) were 11.1 (10.4–14.0) microns in length by 2.5 (2.2–3.4) microns in width. The granular nucleus, which was not surrounded by a membrane, was approximately in the center of the body. Stained preparations, as well as living mounts, showed that the merozoites were capable of penetrating erythrocytes (fig. 2); the recently penetrated merozoites (now young gametocytes) were similar in size and shape to those found in the plasma (fig. 3). Gametocytes varied in size and shape from the recent, slender penetrants to mature sausage forms (fig. 4) which, at the maximum, were 24.3 microns in length by 7.0 microns in width; the granular nucleus, which did not possess a visible membrane, was central in position. The nucleus of the host cell was always displaced by mature gametocytes but the structure was neither lysed nor fragmented. All intracellular forms, regardless of size, were contained within

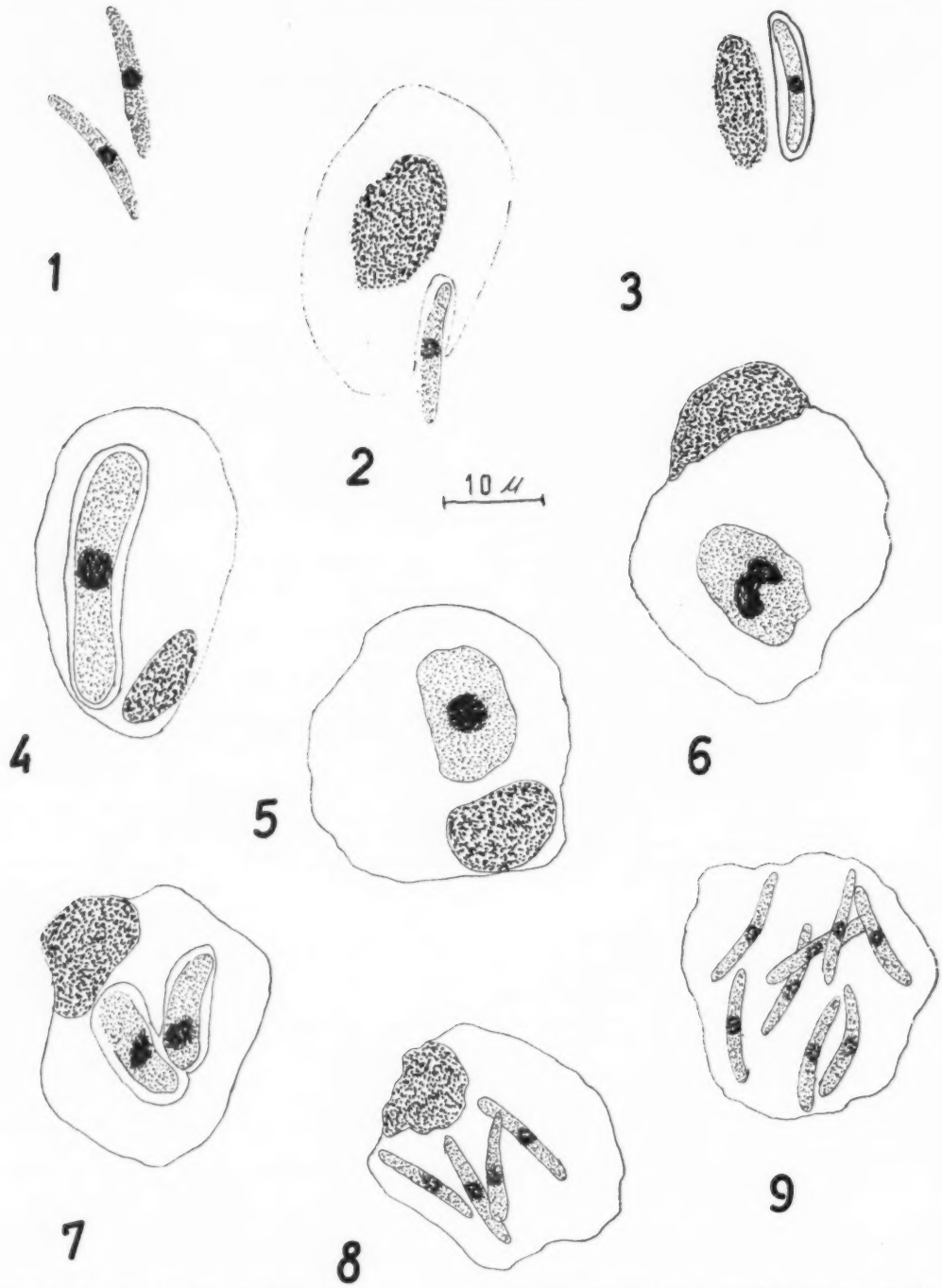

FIG. 1. Merozoites of *Karyolysus sonomae*.
FIG. 2. Merozoite penetrating an erythrocyte.
FIG. 3. Young gametocyte.
FIG. 4. Mature gametocyte.
FIGS. 5–6. Schizonts.
FIG. 7. Secondary bodies resulting from first division of schizont.
FIG. 8. Four merozoites in an endothelial cell.
FIG. 9. Eight merozoites in an endothelial cell.

a clear space in the cytoplasm of the host cell but, no definite capsule was ascertained.

Giemsa's stained thin smears of peripheral blood, the source for most descriptions of haemoparasites, showed the following: measurements and shapes of all forms were similar to those described from haematoxylin preparations. The nucleus, which appeared devoid of a membrane, was composed of a mass of dark blue rods and granules. The cytoplasm stained an irregular white and, upon occasion, one or two small vacuoles were seen near one end of the parasite.

PARASITES OF THE VISCERA

Parasites similar to those recorded from the peripheral blood were found in impressions and sections of the liver, kidney, lungs, and heart. Sections and impressions of the spleen revealed large numbers of similar forms and, in addition, schizogonic stages were found in the endothelial cells of this organ.

Early trophozoites were not seen. The elliptical schizonts (figs. 5, 6) were 10.8 (10.5–12.1) microns in length by 8.4 (7.7–8.9) microns in width. The large granular nucleus occupied half the width near the central portion of the cell. A longitudinal division separated the schizont into a pair of similarly shaped secondary bodies (fig. 7); each of these then divided into two merozoites of identical dimensions as those found in the peripheral blood (fig. 8). Although the typical number of merozoites was four, eight of these bodies were occasionally seen contained within an endothelial cell (fig. 9).

DISCUSSION

Previous reports of *Karyolysus* from the Amphibia have been based, with one exception, upon the forms found in the peripheral blood (Stebbins, 1905), but, unless the site of schizogony is known, it is difficult to distinguish between *Karyolysus* and *Haemogregarina*. Stebbins (1905) described *K. clamatae* from *Rana clamitans* and stated that schizogony occurred in the erythrocytes: this location is inconsistent with the diagnosis of the genus *Karyolysus* but it does correspond with the site of asexual development as found in *Haemogregarina*.

In the case of reptilian *Karyolysus* the invertebrate host is a mite. The vector of *K. sonomae* is, as yet, unknown, but it is not unreasonable to believe that a mite could be incriminated inasmuch as chigger-mites of the genus *Hannemania* have been found parasitizing North American amphibians; the most recent report being that of Hyland (1950) who found this ectoparasite from North Carolina.

SUMMARY

Karyolysus sonomae n. sp. is a parasite of the circulatory system of the California yellow-legged frog, *Rana b. boyli*. Schizogony, which normally results in the production of four merozoites, occurs in the endothelial cells of the spleen. Upon being freed, merozoites penetrate erythrocytes and develop into gametocytes.

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ADDENDUM

The author has recently encountered two papers indicating the presence of Karyolysus like parasites in some South American Salientia. DaCunha and Muniz (*Mem. Inst. Oswaldo Cruz* **20**: 307–314, 1927) indicate that *Haemogregarina leptodactyli* undergoes two types of schizogony in the capillaries of the viscera: in one type, 2–8 merozoites are produced while in the other 16–20 merozoites are formed. This double type of schizogony was not found in *Karyolysus boyli* and, in addition, the number of merozoites produced by *K. boyli* is different from that noted in *K. leptodactyli*.

Scorza, Dagert and Arocha (*Mem. Inst. Oswaldo Cruz* **54**: 373–392, 1956) found what might be a Karyolysus type of division in *Hg. aquai* and *Hg. darlingi*. Both species underwent one type of schizogony in endothelial cells of the viscera; a second, producing larger numbers, was found in the cells of the viscera. This "mixed" schizogony is not a true Karyolysus type, but appears to be intermediate between *Karyolysus* and *Hepatozoon*.

NUMERICAL SOLUTION OF FLOOD WAVE AND RIVER REGULATION PROBLEMS

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(*Read April 25, 1957*)

ATTEMPTS in various directions are being made at present to deal quantitatively with important large scale problems concerning physical phenomena which involve extended regions of the earth and its atmosphere. Thus the meteorologists have been exploring various possibilities for making numerical predictions of the weather, and have made important progress. Oceanographers and seismologists also concern themselves more and more with quantitative aspects of their problems. The prime object of the present paper is to describe a scientific investigation referring to the numerical calculation of flows in large rivers and reservoirs. Such an investigation is not one in which basic laws of nature are to be uncovered, but rather one in which well-known physical laws are to be used deductively to obtain important results of a practical nature. In fact, the laws governing flows in rivers were formulated mathematically by French scientists nearly a century ago. But it is only since the advent of modern high speed digital computing equipment that the mathematical formulation of these physical laws could be used in a practical way to deal with flows in rivers, because of the huge amount of numerical calculation that is required.

During the past three years the feasibility of solving numerically such problems concerning flows in rivers has been investigated at the Institute of Mathematical Sciences of New York University by E. Isaacson, A. Troesch, Milton Rose, H. S. Shulman, and the author under a contract with the Corps of Engineers of the U. S. Army[1] and in cooperation with its Ohio River Division located at Cincinnati, Ohio. Three test cases were selected, with the object of comparing the observed flood stages with those computed numerically: (1) the flood of 1945 (one of the largest on record) in the 375-mile stretch of the Ohio River between Wheeling, W. Va., and Cincinnati, Ohio, (2) the flood of 1947 through the junction of the Ohio and Mississippi Rivers at Cairo, Ill., and (3) the flood of 1950 through Kentucky Reservoir, at the end of the TVA system of power and flood control dams, which extends from Kentucky Dam near the mouth of the Tennessee River to Pickwick Dam 184 miles upstream. In each case the state of the river or river system was taken at the beginning of the flood period, i.e., the river depths and velocities were assumed known everywhere at some arbitrarily selected initial time. For subsequent times the inflow from tributaries and the local run-off in the main valley were taken from the actual records, and the progress of the flood in the main stream was then computed—in our cases the UNIVAC digital computer, built by the Sperry Rand Corporation, was used—for future times of the order of weeks. The flood stages—that is, the heights of the river surface above sea level—as determined numerically were then compared with those actually observed along the river.

The results were very satisfactory. We show, for example, in figure 1 the results of the calculations of river stages at the ends and in the

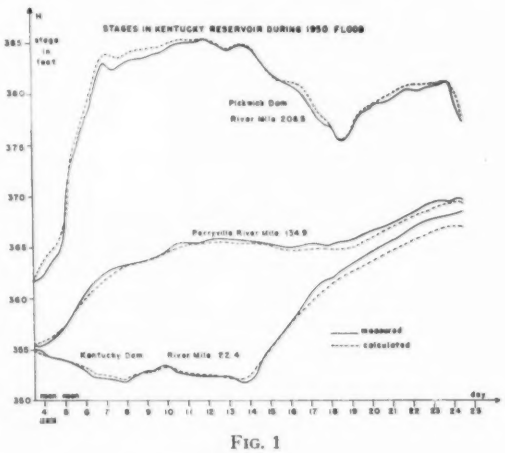

FIG. 1

[1] Although the work to be described here was sponsored by the Corps of Engineers, the responsibility for the views expressed in this article rests with the author and his associates.

middle of Kentucky Rerservoir; as one sees the differences in calculated and observed stages over a period of three weeks are mostly to be measured in inches. The amount of computing time on the UNIVAC required for such a three-week forecast was a little less than four hours. That this is true is, of course, a matter of considerable practical importance from various points of view. Once the basic data for a river, river system, or reservoir have been prepared and coded for a calculating machine it becomes possible to solve all sorts of problems quickly and inexpensively. For example, the effect on a flood wave of closing off a tributary by operating a dam, the relative merits of various schemes for serial operation of dams, the preparation of tables showing the influence of changing the operating schedules of power dams at the ends of large reservoirs, or the solution of design problems in large reservoirs where, for example, navigation problems are complicated by the occurrence of transient waves due to peaking operations of power plants, are all problems which can be successfully attacked numerically.

These observations refer to the experience gained from the use of the UNIVAC computer, which, fast though it is, nevertheless requires roughly a minute to compute the flow for an hour in the 375-mile stretch of the upper Ohio River, and about one-half minute for a flow of one hour in each of the other two cases under discussion here; thus for a flood prediction of $13\frac{1}{2}$ days in the Ohio River about $6\frac{3}{4}$ hours of UNIVAC computing time were needed. However, if the much faster operating IBM-704 machine were used, these times (which, it should be noted, resulted on the very first attempts to use numerical integration methods) would be cut down by a factor of something like one in fifteen—thus reducing the calculating time needed for a flow lasting for weeks from hours down to minutes. It is perhaps not too visionary to predict that one day—and perhaps not too distant a day either—the data for the whole of the Mississippi Valley river system will be coded for calculating machines, ready to deal quickly and efficiently with problems of the most various kinds relating to the system as a whole or to any part of it.

We turn now to a brief discussion in general terms of what is involved in making numerical calculations of flows in large rivers. High speed digital computers were developed primarily as a tool for solving difficult problems in meteorology and compressible gas dynamics: supersonic flows, the development and propagation of shock waves, and all sorts of questions concerning explosions are typical cases. It happens here, as also in many other branches of physics, that problems concerning flows in rivers can be formulated mathematically by differential equations which are exactly analogous to those for a different phenomenon, which happens in this case to be the flow of a gas through a pipe. The analogous quantities are the depth of the water in the river and the density in the gas, while the average velocity of the flow over a cross section plays the same role in both cases. In the gas dynamics problems the general method of attack, employing the differential equations, was to integrate them numerically by using the method of finite differences as a means of obtaining an approximate solution. The same method was used for the flow problems in rivers, which, as it happens, have features which make for more favorable conditions for successful employment of such methods than the gas dynamics problems.

More is needed to solve difficult problems in gas dynamics, and flood wave problems, than fast calculating machines. In fact, digital computers are far from being the mechanical brains about which much has been written—they are, instead, quite stupid in the sense that they can say only "yes" or "no," and do that only when explicitly ordered to give one or the other reply. However, they perform this trivial operation at tremendous speed, and when knowledgeable human beings give detailed instructions, all phrased in terms of these two responses, it is possible to solve some types of physical problems with their aid which were regarded as hopelessly difficult a few years ago. A good many of these problems are formulated in terms of nonlinear partial differential equations. It is necessary to have an understanding of the basic mathematical theory of such differential equations in order to work with them numerically, and, in addition, the numerical methods themselves require study and analysis, since there is always a danger that approximate numerical methods will give quite illusory results. Indeed, a whole new branch of mathematics, called numerical analysis, has been developed through needs of this kind. Fortunately, for the specific case of flood waves in rivers there was a fund of basic knowledge of this sort already available through the efforts of others engaged in working in gas dynamics, though the flood wave problems also presented some new surprises, new disconcerting occur-

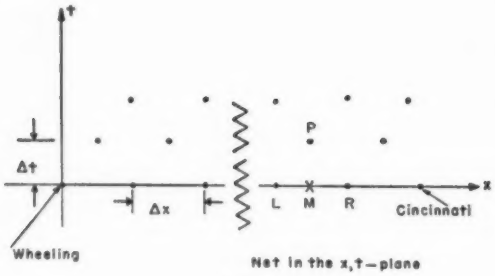

FIG. 2.

rences, which had to be studied and dealt with.

The author would prefer at this point to write down the two nonlinear partial differential equations which govern the flows in rivers, and go on from there to the description of the numerical methods used to solve them but such a procedure seems unreasonable in a descriptive paper. However, a reasonably intelligible statement in general terms concerning the procedures used can be made. In each case we must determine the height H, or stage, of the water in the river, and its average velocity V over a cross section at right angles to the river channel. Both of these quantities are to be determined as functions of the distance x along the river and of the time t. Instead of trying to solve the two differential equations—which are nothing but mathematical formulations of the law of conservation of mass and of Newton's second law of motion—for the unknown quantities H and V for all values of x and t under consideration, one seeks instead approximate values for H and V at a discrete net of points in an x, t-plane, as indicated in figure 2. For example, in the case of the upper Ohio River, the stretch from Wheeling to Cincinnati was divided up into ten-mile intervals Δx between net points, and approximate values of H and V were calculated at these points. (To have stages and velocities at points ten miles apart is quite sufficient for practical purposes.) At the initial instant $t=0$, i.e., on the x-axis itself, (which correspond to February 27, 1945, in this case), it is necessary to know the state of the river, which means that stage and velocity must be known at all net-points on the x-axis at this time. Once these values are prescribed, and the inflows are given (these are fed in at net points), the values of H and V are advanced by a time increment Δt through use of the differential equations. Technically, this is done by approximating derivatives in the differential equations by difference quotients which make use of values of H and V at net points only; the result is a system of algebraic equations which are solved by the calculating machine to yield approximate values of H and V at all net points.

The differential equations expressing the laws of conservation of mass and momentum contain in them four coefficients which characterize the properties of a given river with respect to flows in it. These are the cross-section area A of the river, the breadth B of the river, and a roughness factor G, all of which must be known in their dependence on the stage H (or, in other words, the depth of the river) and the location x along the river. The slope of the river bed must, of course, be known; it is a function of x. Finally, the flow into the river from tributaries and local drainage areas must be known as a function of x and t. For a long stretch of river it is a quite large order to collect such information. Of course, it is not needed literally at all points along the river, but only at the net points used in the finite difference scheme, and consequently the values of the coefficients at these points should represent reasonable averages over intervals of length equal to the distance Δx between net points—in our cases ten-mile intervals. The cross-section areas and the breadth B are best obtained from topographic maps, or special surveys if they are available.

Altogether, the collecting and processing of this type of basic data is a laborious but important and crucial task, which furthermore requires close cooperation with the engineers familiar with the data. The basic data for the 375-mile stretch of the Ohio River, for example, required the availability to the calculating machine of more than 1,100 constants.

Once the differential equations have been properly formulated the next problem is how to solve them with the required degree of accuracy

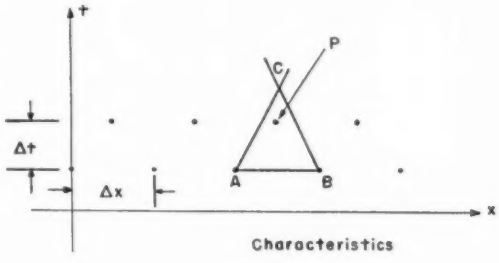

FIG. 3.

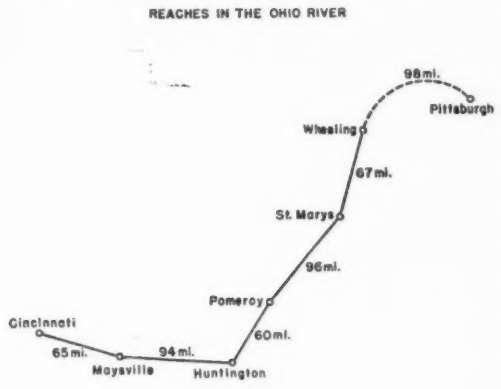

FIG. 4

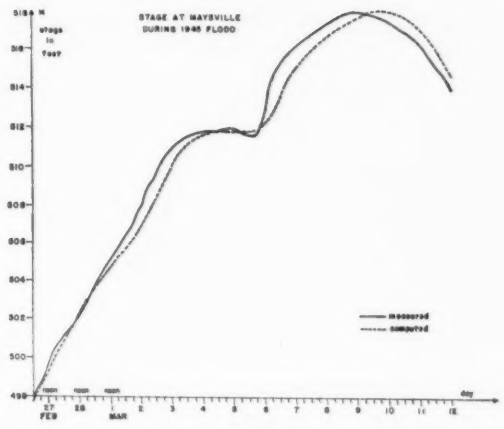

FIG. 5

without using too much costly calculating machine time. After all, it is even conceivable *a priori* that it might take longer to predict a flood numerically than the time of duration of the flood itself. The question of accuracy of the approximation has been studied, as was remarked above, for differential equations of the type in question here. It is known that approximations to the exact solutions can be made with as much accuracy as desired by taking the mesh-widths in the finite difference scheme referred to in connection with figure 2 sufficiently small. However, it is a striking and interesting fact that it is not possible to dispose of the size of the mesh-width interval Δt in the time variable independently of the interval Δx in the space variable; instead, once an interval Δx has been chosen—presumably small enough for the accuracy desired in the approximate solution—the time interval Δt must not be taken larger than a certain multiple of Δx which depends upon the stage H and velocity V. If this rule is violated, the consequence is not simply an inaccuracy in the results; rather, totally unusable values for the unknowns are obtained. This fact is one of the important discoveries in numerical analysis to which reference was made earlier. This fact also has decisive practical importance, since the amount of calculating machine time needed to solve a given problem is directly proportional to the number of net points and hence inversely proportional to the permissible size Δt of the time increment. For example, in our three problems in which an interval $\Delta x = 10$ miles was chosen for the space variable (on the basis of preliminary calculations in simple cases) the maximum time interval permissible was about 10 minutes; we therefore chose 9 minutes as time increment to be on the safe side. Since some of the calculated flows had a total time duration of three weeks, it is obvious that the limitation of 9 minutes as the time step by which the solution could be advanced at any one step means that a large number of net points was needed, with correspondingly large amounts of calculating machine time. Fortunately, as was already remarked above, the calculating machine time needed turned out to be small enough to be reasonable.

We proceed to give an account of the actual results obtained in the three cases treated up to now by numerical methods.

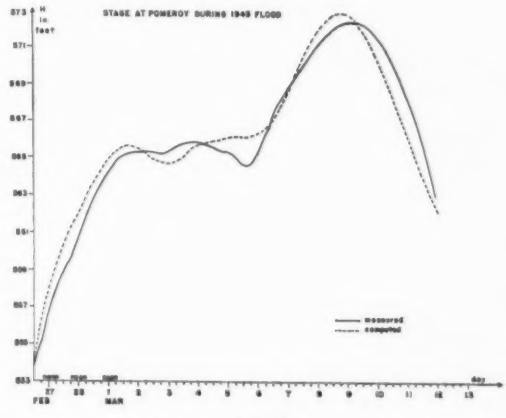

FIG. 6

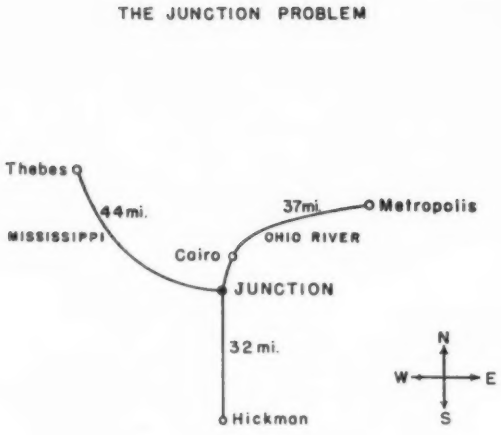

FIG. 7

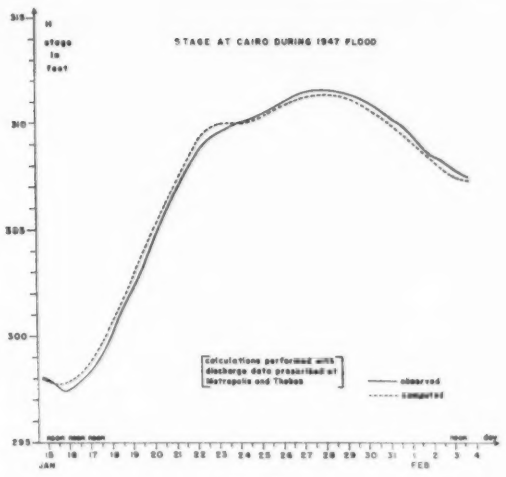

FIG. 9

We begin with the case of the upper Ohio River, shown diagrammatically in figure 4. Figures 5 and 6 show calculated *versus* observed river stages (given as heights above sea level) at Maysville and Pomeroy for somewhat more than two weeks of the 1945 flood; this period includes the crest of the flood. As one sees, the agreement of the calculated with the observed stages is quite good, the differences between the two being mostly less than one foot.

Figure 7 shows a diagram of the junction of the Ohio and Mississippi Rivers. The flow velocities into the river at Thebes and Metropolis were given, and a relation (called a rating curve) between stage and discharge was given at Hickman in the lower Mississippi. Figures 8 and 9 show calculated and observed stages at Hickman and Cairo, and figure 10 the same things at Metropolis for a period of three weeks during the 1947 flood in the Ohio River. Again the agreement of the two is very good, and even minor variations in the curves for the observed stages are mirrored in the curves obtained by calculations. The differences between observed and calculated stages in this case are of the order of inches.

Figure 11 is a diagrammatic sketch of Kentucky Reservoir at the mouth of the Tennessee River. In this case the motion of the water in the reser-

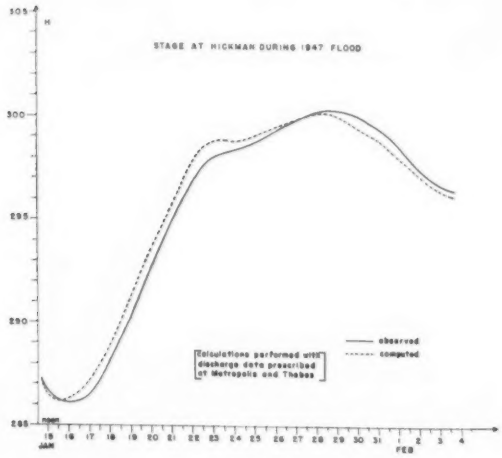

FIG. 8

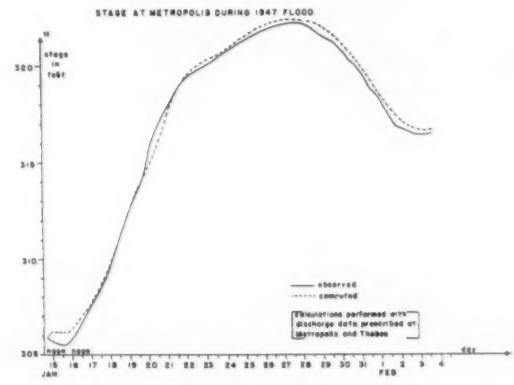

FIG. 10

FIG. 11

voir was almost entirely controlled by the releases of water at Kentucky Dam and Pickwick Dam at its ends, since inflows from the local drainage area were not great. Figure 12 is a graph showing the releases at these two dams during three weeks of the 1950 flood. As one sees, the releases varied rather rapidly at the beginning—to empty the dams in order to provide storage for the flood water coming down. The results of calculating stages at the two ends of the reservoir and at Perryville near its center have already been shown in figure 1. Again the agreement between observed and calculated stages is very good for the entire period of three weeks.

Thus the combination of knowledge of various mathematical techniques—partly concerning the theory of partial differential equations and partly concerning relatively recent discoveries in numerical analysis—together with adequate computing machines has led to the successful solution of problems of a type which are of considerable importance from a variety of different practical points of view.

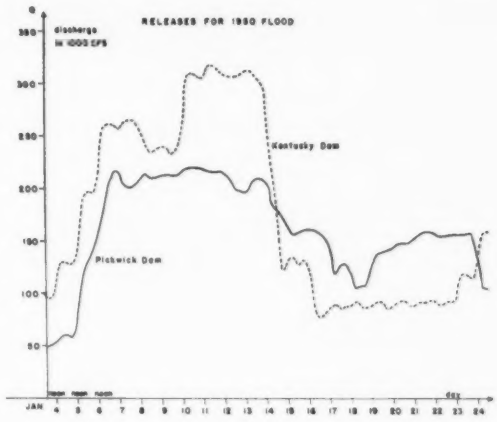

FIG. 12

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PHILOSOPHICAL IMPLICATIONS OF THE PELAGIAN CONTROVERSY *

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Of the many problems involved in the controversy between Augustine and Pelagius in the early part of the fifth century I shall deal here this morning only with one problem, the problem of free will, and of the several aspects of this problem I shall deal only with one, its philosophical aspect.

To Greek philosophers, human action is the resultant of a conflict of forces. Man is conceived by them as being constantly pulled by two opposite forces, called emotion and reason, and at every turn of his life man is faced with the problem of deciding whether to follow the one or the other. But the decision is not his. It is made for him by the relative strength of these two forces, and the strength of these forces is determined by nature, for man is part of nature and is governed by its laws. But what are the laws of nature? Greek philosophers, because of their belief in the inexorableness of these laws, described them by the mythological term fate. Thus Plato in his *Timaeus* (41*e*) refers to them as the "fated laws" (*νόμοι εἱμαρμένοι*) which the Demiurge declared to constitute the nature of the universe, Aristotle in his *Physics* (V, 6, 230*a*, 32), by implication, refers to generation according to nature (*κατὰ φύσιν*) as generation determined by fate (*εἱμαρμένη*), and the Stoics, through many of the fragments which have preserved their teachings, use "nature," and "fate" as synonymous terms.[1] And it was the Stoics who in their doctrine of Palingenesis have given the ultimate expression to this conception of human action, for according to this doctrine of an eternally recurrent world-process we are all bound to do what infinite predecessors had done in an infinite succession of worlds before us.

Still all these philosophers speak of freedom of the will and in their discussion of legal responsibility and moral virtue they distinguish between actions done voluntarily and involuntary actions. But free will or choice, according to them, does not mean man's absolutely unlimited power to choose between several alternative actions; it means to them only man's power to choose between alternative actions without external compulsion, even though by his internal nature he has already been determined from eternity to act only in one single way. A man's act is called by them free even if it could not be otherwise, provided only that he was not compelled to do it by some force external to him. Freedom means to act by the necessity of one's own nature, a nature which itself is prefated and predetermined.

This is the relative conception of freedom.

In Palestinian Judaism at the time of the rise of Christianity man was also conceived as being constantly drawn by two opposite forces. These forces were called the good impulse and the evil impulse. But Hellenistic Judaism, through its spokesman Philo, identified these good and evil impulses with what the philosophers called emotion and reason. To both Palestinian and Hellenistic Judaism, however, human action was not the resultant of these two forces; it was the result of the unrestrained choice of the human will. Man indeed is a part of nature, and as a part of nature it often happens that one of these two forces is the stronger. Still it is not always the stronger force that prevails. Man can decide in favor of the weaker force. As expressed by Philo, God has endowed man with part of His own power and freedom, and, just as God who implanted in the world the laws of nature has reserved for himself the right to override these laws of nature and work what is called miracles, so also man has the miraculous power to override the laws of his own nature. Moreover, even when man, because he is part of nature, finds himself powerless to fight the evil force within him, if he only makes an honest effort to do so, he may receive help from God. This is what is called divine grace, a merited or

* This paper is based upon a longer, more fully documented, and differently constructed study of the same subject to be included as a chapter in Volume II of my *Philosophy of the Church Fathers*.

[1] *Cf. Index Verborum* to Arnim's *Stoicorum Veterum Fragmenta*, under *εἱμαρμένη*.

auxiliary kind of grace. Man is therefore asked to pray for this divine help or grace. It is this kind of grace, a merited or auxiliary kind of grace, that was meant when the rabbis prayed that the evil impulse might not have sway over them and that their souls might pursue the divine commandment, or when Philo urged people to offer a prayer to God, petitioning for assistance in their effort to do good. It is also this kind of merited or auxiliary grace that was meant when Jesus instructed his disciples to pray to God to deliver them from "evil" or rather "the evil one" (Matthew 6: 13, Luke 11: 4), that is, the evil impulse. It was a prayer for divine assistance or grace to overcome the evil impulse, without any implication that by their own effort they had no freedom to overcome him.

This is the conception of absolute freedom of the will.[2]

It is these two conceptions of freedom that the Fathers of the Church were confronted with. Though the earliest Church Fathers, from Aristides to Clement of Alexandria, were all converts to Christianity, coming from a pagan background and trained in pagan philosophy, they all chose to follow the Philonic conception of absolute freedom.

Let us sketch briefly the salient points in their discussion of the problem of freedom. Following Jewish tradition, both Hellenistic and Palestinian, they all begin with the statement that God created Adam free and master over his own will and actions. And because Adam was a free agent, when he fell, it was by his own free will that he fell. Then they all begin to debate whether there were any consequences of that fall. From Jewish tradition they inherited the question whether physical death was a consequence of that fall or not. Most of them said yes, some said no—a difference of opinion the like of which existed also in Judaism. Then, without any support from Jewish tradition, but as an interpretation of a statement by Paul, there was introduced the view that the sin of Adam itself was transmitted to his descendants. This is the doctrine of original sin. Then, again, from Jewish tradition there was introduced the view that the fall of Adam left a taint or corruption upon the moral character of his descendants. This is the doctrine of original corruption. These two doctrines are sometimes combined by the Church Fathers or identified, but, as they each have a different origin, they should be distinguished from each other and, in fact, some Church Fathers treat of them as if they were two distinct doctrines. What the Fathers before Augustine meant by the original corruption, as may be gathered from their statements about it, is that, by his fall, Adam's own power, as well as the power of his descendants, to resist the evil impulse within them was weakened, so that they became more in need of divine assistance to overcome it. With none of the Fathers did it mean a complete loss of the power of freedom. Man was still free and he was free in two senses. In the struggle between the spirit and the flesh, he still had the power to resist the flesh, even though he was now in greater need of divine grace. And if divine grace was extended to him, he still had the power to resist that grace. When, therefore, the Fathers repeated the Lord's prayer, petitioning God to deliver them from evil or from the evil one, they only asked to help them to make the right choice and to carry out into action the choice they have made by their own free will. Freedom of the will was still absolute.

This was the situation toward the end of the fourth century.

But in 400, Augustine's *Confessions* appeared, which contained the following prayer: "Give what thou commandest, and command what thou wilt."[3] Five years later, as Augustine himself informs us, a Bishop in Rome recited it in the presence of Pelagius.[4] Now, by itself, out of its context, this prayer could be taken only as a prayer for divine auxiliary grace, without any implication of a denial of free will. But it happens that in the *Confessions*, immediately after the prayer, Augustine wrote his own commentary on it. In that commentary he made it clear that grace did not follow free will, as something merited and auxiliary, but preceded it and created it. A similar view was expressed by him in another work[5] which had appeared about three years prior to the appearance of the *Confessions*. Pelagius evidently knew the true meaning of the prayer, and so the Pelagian controversy started.

In this controversy, Pelagius maintained that there was no loss of free will in the descendants of Adam as a result of the fall. Accordingly, in every man today, as in Adam before the fall, there still abide two impulses, the good and the evil,

[2] See chapter on "Free Will" in my *Philo* 1: 424–462.

[3] *Confess.* X, 29, 40.

[4] *De Dono Perseverentiae* 20, 53.

[5] *De Diversis Quaestionibus ad Simplicianum* I, 7 (Migne, *Patrologia Latina* [hereafter PL] **40**, 115).

and every man today, again as Adam before the fall, is free to choose between the two impulses, even when one of them happens to be dominant, for, as he is reported to have said, "newborn infants are in the same condition as Adam was before the fall." [6] Philo similarly had taught that "the soul of an infant . . . has no share in either vice or virtue" [7] or that "by nature all we men, before the reason in us is fully grown, lie in the borderline between vice and virtue, without ever inclining as yet to either side." [8] This is the prevailing view among the Fathers before Augustine, both Greek and Latin.

Defining freedom of choice (*libertas arbitrii*) as consisting "in the capacity (*possibilitas*) of abstaining from sin," [9] Pelagius conceives of this freedom as absolute. Like Philo, who maintains that, even though free will is the "most peculiar possession of God," by His having bestowed it upon His rational creatures, man "has been made to resemble Him," [10] Pelagius maintains that, even though free will "properly belongs to God," God "has bestowed it upon His creatures" [11] and thereby man has become "emancipated from God." [12] This was also the prevailing view among the Fathers before Augustine. For the purpose of illustration we may cite here a Latin Father, Tertullian. "I find," he says, "that man was by God constituted free master of his own will and power," for "in nothing else does man show more the image and likeness of God" than "in that essence which he derived from God himself, the spiritual, which answered to the form of God, and in the freedom and power of his will," [13] and in support of his belief in free will, like Philo,[14] he quotes the Old Testament verses, "See I have placed before thee this day life and good, and death and evil . . . therefore choose life" (Deut. 30: 15, 19).

By the same token, man also has absolute power to do good. But as in Philo and the rabbis and the Church Fathers before him, Pelagius draws a distinction between man's freedom of doing evil and his freedom of doing good. In both cases the choice of his will is absolutely free. But in the effectuation of his choice there is a difference. Once man has chosen to do evil, he is left to himself to carry out the decision of his will. God will neither help him nor hinder him. But once man has chosen to do good, and meets with difficulty in carrying out the good decision of his will, God will come to his help. This is Pelagius' conception of grace—a grace which is merited and only auxiliary. As reported in his name by Augustine: "Pelagius says that what is good is more easily (*facilius*) fulfilled if grace assists." [15]

In contradistinction to all this, Augustine maintains that as a result of the corruption produced by the fall of Adam and inherited by his descendants that freedom consisting of the ability to sin or not sin which was possessed by Adam before his fall is no longer possessed by his descendants. Whatever man today does he does it not by his own free choice but by necessity. This view is expressed by him in a variety of ways. In one place, he raises the question, "By what means is it brought about that man is with sin—by the necessity of nature, or by the freedom of choice?" In answer to this he says: "It came by freedom of choice that man was with sin; but a penal corruption (*vitiositas*) closely followed thereon, and out of liberty produced necessity," [16] so that "because the will has sinned, the hard necessity of having sin has pursued the sinner." [17] In another place, he raises again the question, "Can men do anything by the free determination of their own will?" and again his answer is: "Far be it, for it was by the evil use of his free will that man destroyed both it and himself." [18] Man thus both sins and does good not by freedom of choice but by necessity. This necessity is described by Augustine by two terms, one applied to the necessity by which one sins and the other to the necessity by which one refrains from sinning and acts righteously.

As to the necessity by which one sins, Augustine describes it by the term concupiscence, which he identifies with sexual desire and considers it as the source of all sin. He is uncertain whether concupiscence in this sense existed in Adam before the fall or did not exist in him, but he is certain that, if it did exist in him before the fall, it existed in him then in some innocent form

[6] Augustine, *De Gestis Pelagii* 24 (PL **44**, 334).
[7] *Legum Allegoria* II, 15, 53.
[8] *De Praemiis* 11, 62.
[9] *Contra Julianum Opus Imperfectum* I, 78 (PL **45**, 1102).
[10] *Quod Deus Sit Immutabilis* 10, 47–48.
[11] *De Gratia Christi* I, 4, 5 (PL **44**, 362).
[12] *Contra Julianum Opus Imperfectum* I, 78.
[13] *Adversus Marcionem* II, 5.
[14] *Quod Deus Sit Immutabilis* 10, 49–50.
[15] *Contra Duas Epistolas Pelagianorum* II, 8, 17 (PL **44**, 583).
[16] *De Perfectione Institiae Hominis* 4, 9 (PL **44**, 295).
[17] *Ibid.* (296).
[18] *Enchiridion* 30 (PL **40**, 246).

and only later was it corrupted by the fall.[19] He is also certain that, as a result of the fall, concupiscence in the descendants of Adam is "a corruption" (*vitium*), which, "like a bad state of health is implanted in man from a corrupt origin, by which corruption," and here Augustine quotes from the New Testament (Gal. 5: 17) the words, " 'the flesh lusteth (*concupiscit*, ἐπιθυμεῖ) against the spirit.' " [20] Moreover, this lusting of the flesh against the spirit cannot be resisted by man, for, he maintains, "the power of good living . . . is not given save by God's grace" [21] and by grace, he goes on to explain, he does not mean merely God's helping man to carry out the decisions of his free will.[22]

There is no statement by any of the Fathers prior to Augustine in which the corruption transmitted by Adam to his descendants as a result of the fall is called concupiscence; unless it be the statement in the *Apocalypse of Moses* that the "poison" (ἰός) with which the serpent infected Eve, and was evidently transmitted to future generations, is called ἐπιθυμία, "concupiscence." [23] But there is no evidence that this statement existed before the time of Augustine or that it was known to him. Nor is there any statement by any of the Fathers before Augustine which identifies the inherited corruption exclusively with sexual desire described by some other term. In fact, Augustine himself does not always use the term concupiscence in a bad sense and in the exclusive sense of sexual desire, for on the basis of such verses as "My soul hath coveted (*concupivit*, ἐπεπόθησεν) to long (*desiderare*, ἐπιθυμῆσαι) for thy justifications, at all times" (Ps. 118/9: 20) and "The desire (*concupiscentia*, ἐπιθυμία) of wisdom bringeth to a kingdom" (Wisdom 6: 20) and "Thou shalt not covet (*concupisces*, ἐπιθυμήσεις)" (Exod. 20: 17) he infers that concupiscences may be either laudable or condemnable.[24] Moreover, of condemnable concupiscences, on the basis of the verse, "For all that is in the world, is the concupiscence of the flesh, the concupiscence of the eyes, and the pride of life, which is not of the Father, but is of the world" (I John 2: 16), he infers that the pleasure of the flesh, curiosity, and pride include all sins,[25] and he explicitly explains that "concupiscence of the flesh" in the verse quoted refers to "food" [26] and he also explicitly uses the expression "the concupiscence of eating and drinking." [27] The reduction of all bad concupiscences to the concupiscence of sex and the identification of sexual concupiscence with the inherited corruption is something new introduced by Augustine into Christian theology.

Still this theological innovation is not without its philosophical background. *Concupiscentia* is one of the Latin terms by which the Greek term ἐπιθυμία is translated in philosophical literature, the other Latin terms being *libido*[28] and *cupiditas*.[29] In Plato the underlying Greek term is used as a description of one of his three parts of the soul and as the opposite of the rational soul.[30] In Aristotle it is used in the technical sense of an irrational appetite.[31] Among the Stoics it is one of the four primary emotions and is again an irrational appetite.[32] Then, in Plato there are the statements that "the concupiscent soul" is the largest part of our soul and "contains bodily pleasures" [33] and that "pleasure is the strongest allurement to evil." [34] In Aristotle there is the statement that "concupiscence is the appetite for what is pleasurable" [35] and also the statement that "the pleasure of coition is more vehement (σφοδροτέρα) [36] than other pleasures, which is reflected in Philo's statement that the pleasures connected with coition are "the most vehement (σφοδρόταται)." [37] All these must have created in the minds of students of philosophy the view that the concupiscence for the most vehement of pleasures, namely, the sexual pleasure, is the strongest allurement to evil.

How Augustine arrived at the belief in the

[19] *Contra Julianum Opus Imperfectum* VI, 22 (PL **45**, 1553).

[20] *Contra Julianum* VI, 18, 55 (PL **44**, 855).

[21] *Contra Duas Epistolas Pelagianorum* I, 2, 5 (PL **44**, 552).

[22] *Ibid.* I, 2, 6.

[23] *Cf.* C. Tischendorf, *Apocalypses Apocryphae*, 10–11.

[24] *Enarrationes in Psalmos*, Ps. 118, Sermo 8, No. 3.

[25] *Ibid.*, Ps. 8, No. 13 (PL **36**, 115).

[26] *Ibid.* (116).

[27] *Confess.* X, 31, 47.

[28] *Cf.*, for instance, Cicero's Latin translation of the Stoic four principal emotions (*Tusc. Disp.* III, 11, 24; IV, 7, 14; *De Finibus* III, 10, 35).

[29] *Cf.*, for instance, Augustine's Latin translation of the Stoic four principal emotions (*De Civitate Dei XIV*, 5).

[30] *Rep.* IV, 435 E-439 E.

[31] *De Anima* III, 10, 433*a*, 25–26.

[32] Diogenes Laertius, VII, 113.

[33] *Rep.* IV, 442 A.

[34] *Tim.* 69 D.

[35] *De Anima* II, 3, 414b, 5–6.

[36] *De Gen. Animal.* I, 18, 723*b*, 33, according to the reading in MS Vat. 261 recorded in Bekker. Other MSS. read σφοδρὰ (*cf.* I, 17, 721*b*, 15).

[37] *Legum Allegoria* II, 18, 74.

irresistibility of concupiscence is explained by himself. Early in his life, he reminisces, even though in himself he did not find the power to overcome his sexual concupiscence, he still believed that continency was in our power.[38] But a verse in the Vulgate Latin translation of the Wisdom of Solomon convinced him that continency was not in the power of man. The verse in question (8: 21) reads: *Et ut scivi quoniam aliter non possem esse continens, nisi Deus det,* which was taken by Augustine to mean: "And as I knew that I could not otherwise be continent, except God gave [it]." If this is really what has led Augustine to the belief in the irresistibility of concupiscence, and it would seem to be so, for he quotes this verse twenty-odd times in his works in support of it, then this belief of his has its origin in a misunderstanding of the meaning of the verse. In the original Greek, the verse quite unmistakably refers to wisdom, which is mentioned previously, and it reads: "And as I knew that I could not otherwise obtain (ἐγκρατὴς) [it], except God gave [it]." This is undoubtedly what the Vulgate Latin translation also meant, for in two other places it uses the term *continens* as a translation of the Greek ἐγκρατὴς, namely, in Ecclesiasticus 6: 27/8 and 15: 1, and in both these places there can be no doubt that the term *continens* is used in the sense of "obtaining" or "possessing."[39] What happened here, then, is that Augustine misunderstood the meaning of the term *continens*, taking it in the sense of "continent," and thus derived therefrom his belief in the powerlessness of man to abstain from sin. A similar misunderstanding of the same verse in its Latin translation seems to be found also in Tertullian,[40] but Tertullian does not derive from it the same belief as Augustine.

The necessity by which man can refrain from sin and act righteously is divine grace, which alone, as said by him in the passages quoted above, can resist concupiscence. Then Augustine goes on to maintain that, just as man is powerless to resist his concupiscence, so he is also powerless to resist the grace bestowed upon him by God; and consequently, just as by the necessity of his concupiscence man must sin, so by the necessity of grace man must refrain from sinning and act righteously. This irresistibility of grace is expressed by him in passages wherein he speaks of the human will as being "indeclinably (*indeclinabiliter*) and invincibly (*insuperabiliter*) influenced by divine grace"[41] and of God as He "whom no man's will resists when He wills to give salvation."[42] The irresistibility of grace is also suggested in the statement that of "whomsoever He has mercy, He calls him in a manner which He knows would befit him that he would not reject Him who called him."[43] Since man has no power of his own to resist concupiscence, or even to will to resist it, the grace bestowed upon him by God could not be a merited grace or an auxiliary grace; it must be a free gift of God which creates in man not only the will to resist concupiscence but also the power to carry out the decision of the will which He himself has created in man. Augustine formally distinguishes between these two aspects of grace, the former being described by him as prevenient or operative grace and the latter as subsequent or cooperative grace.[44] Both these two aspects of grace are free grace, for according to him there is no other kind of grace. "Grace," he lays it down as a general principle, "is not rendered for any merits, but is given *gratis*, on account of which it is called grace (*gratia*)."[45] From this he is led to say that "no man ought, even when he begins to possess good merits, to attribute them to himself and not to God."[46] Augustine, of course, knew that men were instructed to pray to God to deliver them from evil or from the evil one, and this would seem to imply that God's help in delivering men from evil, which comes as an answer to prayer, is a merited grace. But, in anticipation of such reasoning, Augustine maintains that even God's answer to man's prayer cannot be considered a merited grace, for the will to pray as well as the act of praying does not come from man but from God. Thus, referring to those "who think that our seeking, asking, knocking is of ourselves, and is not given to us," he says that "they are mistaken" and that they do not understand "that this is also of the divine gift, that we pray; that is, that we ask, seek, and knock."[47]

[38] *Confess.* VI, 11, 20.

[39] *Cf.* W. J. Deane's note in his edition of *The Book of Wisdom, ad loc.*

[40] *De Virginibus Velandis*, 13.

[41] *De Correptione et Gratia* 12, 38 (PL **44**, 940).

[42] *Ibid.*, 14, 43 (942).

[43] *De Diversis Quaestionibus ad Simplicianum* I, 7 (PL **40**, 115).

[44] *Enchiridion* 32 (PL **40**, 248); *De Gratia et Libero Arbitrio* 17, 33 (PL **44**, 901).

[45] *De Natura et Gratia* 4, 4 (PL **44**, 249).

[46] *De Gratia et Libero Arbitrio* 6, 13 (PL **44**, 889).

[47] *De Dono Perseverantiae* 23, 64 (PL **45**, 1032).

The debate between Augustine and Pelagius ran the normal course of all religious debates. They quoted Scripture against each other. They hurled ancient authorities at each other. They spun arguments against each other. Then, as so often happens in theological discussions, they began to call each other names. Said Augustine to Pelagius: You are a Jew in all but name.[48] Said Pelagius to Augustine: You are a fatalist; you assert fate under the name of grace.[49] And both of them shouted at each other: You are a Manichaean.[50] We do not know what Pelagius' answer would have been, and I shall not try to reconstruct on the basis of what we know of his views what his answer would have been, though it could be done. But Augustine answered it in many places of his works and in many different ways. I shall try to give a brief analysis of his answer.

Quoting a passage from Seneca, he derives therefrom the Stoic definition of fate. Fate, according to the Stoics, he says, contains among others the following points: (1) There is an order and connection of causes which makes everything become what it does become. (2) This order and connection of causes is traceable to the will and power of God. (3) This will and power of God "extends itself irresistibly through all things." [51]

With this view, that there is an order of nature predetermined by an irresistible will of God, Augustine agrees.[52] He would be even willing to use the term "fate" as a description of this predetermination of the will of God, for, etymologically, he argues, the Latin *fatum*, "fate," means "that which is spoken," and Scripture describes the determination of God's will by the expression, "God hath spoken once" (Ps. 62/1: 12).[53] Still he is reluctant to use the term fate, and this because in popular language the term "fate" means the belief in "the influence of that particular position of the stars which may exist at the time one is born or conceived," [54] and so, he says, "if any one," like the Stoics, "calls the will of God or the power of God itself by the name of fate, let him keep his opinion but correct his language." [55] Still he considers the whole matter as "a merely verbal controversy." [56]

But despite all this, Augustine maintains that man is free. If he sins, he sins freely, even though his sinning is predetermined by his irresistible concupiscence. Thus answering to the charge that he believed that "by the sin of the first man, that is, of Adam, free will perished; and that no one has now the power of living well, but that all are constrained to sin by the necessity of the flesh," [57] he exclaims: "For who of us can say that by the sin of the first man free will perished from the human race?" and proceeds to explain that only the freedom enjoyed by Adam in Paradise, the freedom "to live well and righteously," was lost, but not the freedom by which all sin, "especially they who sin with delight (*delectatione*) and with love (*amore*) of sin; they will what pleases them." [58]

Similarly, if man does good, he does good also freely, even though his doing of good was predetermined by an irresistible grace. Thus, while on the one hand, he describes divine grace as being indeclinable and invincible and the divine will to give salvation as irresistible, he still says that "to yield our consent, indeed, to God's summons, or to withhold it, belongs to our will" [59] and that "we know that those who with their own heart believe in God, do this with their will and with their free choice." [60] But when he was asked how the two statements could be reconciled, all he answered is this: "The reason, however, why in doing a right action there is no bondage of necessity, is that liberty comes from charity (*charitatis*)." [61]

It is obvious then that Augustine himself believed that even under the power of concupiscence or of grace man acts not by necessity but by free will and the reason given by him why man, who can only act in one predetermined way, is still said to act by free will is that when man sins he sins "with delight (*delectatione*) and love (*amore*) and when he does a right action his action comes from charity (*charitatis*)." But this is hardly an explanation on the basis of what we know to have been Augustine's view on the nature of "delight" and "love" and

[48] *Epist.* 196, 1, 7 (PL **33**, 893).
[49] Augustine, *Contra Duas Epistolas Pelagianorum* II, 5, 10 (PL **44**, 577).
[50] Augustine to Pelagians: *ibid.*, IV, 4, 6 (613). Pelagians to Augustine: *ibid.*, I, 2, 4 (552); *Contra Julianum* I, 3, 5, (PL **44**, 643).
[51] *De Civitate Dei* V, 8.
[52] *Ibid.*
[53] *Ibid.*, V, 9.
[54] *Ibid.*, V, 1.
[55] *Ibid.*
[56] *Ibid.*, V, 8.
[57] *Contra Duas Epistolas Pelagianorum* I, 2, 4 (PL **44**, 552).
[58] *Ibid.*, I, 2, 5 (PL **44**, 552).
[59] *De Spiritu et Littera* 34, 60 (PL **44**, 240).
[60] *Epist.* 217, 5, 16 (PL **33**, 985).
[61] *De Natura et Gratia* 65, 78 (PL **44**, 286).

"charity." According to Augustine, delight in the pleasures of this world is to be called a "delight of concupiscence" (*delectatio concupiscentiae*)[62] and similarly the love with which one sins is to be called *cupiditas* or *libido*[63]—terms which are synonymous with the term *concupiscentia* as translations of the Greek ἐπιθυμία.[64] And so also with regard to charity by which one does right actions, Augustine repeatedly says that "charity" (*charitas*), like grace, is a free gift from God.[65] How then could Augustine offer "delight" and "love" and "charity" as explanations of why certain actions are actions of free will and not of necessity, when he himself ascribes "delight" and "love" to "concupiscence" and "charity" to a sort of "divine grace," and "concupiscence" and "grace" themselves are according to him, irresistible and render all actions proceeding from them necessary? Since Augustine does offer these terms as an explanation of actions which are voluntary and not necessary and since he expects his opponents to be satisfied with this explanation without any further elucidations on his part, he undoubtedly must have touched here upon some distinction between the terms voluntary and necessary which was well known to students of philosophy of his time, so that he could be confident that only by alluding to it the matter would be clear to them without the need of any further elucidation.

What then is that well-known distinction alluded to here by Augustine?

That distinction, we shall try to show, is based upon two passages in Aristotle. In one of these passages, Aristotle distinguishes between two usages of the term necessary (ἀναγκαῖον), one in the sense of that which is compelled (τὸ βίαιον) by something external to itself, and the other in the sense of that which cannot be otherwise, as, for instance, a demonstration is said to be a necessary thing, because the conclusion cannot be otherwise, not because it is compelled by something external to itself, but because it is the nature of the first premise that that particular conclusion must proceed from it by necessity.[66] In the other passage, using the term necessary in the sense of being compelled by an external cause, he contrasts with it any action caused by an internal tendency (ὁρμή), such as appetite (ὄρεξις), concupiscence (ἐπιθυμία), and reason (λόγος) in animate beings, and this kind of action he describes as voluntary (ἑκούσιος).[67] From a combination of these two passages it would be possible for one to form the opinion that necessary in the true sense of the term is to be applied only for that which is compelled by an external force, and that any action in animate beings caused by an internal tendency and not by an external force, even if it is necessary in the sense that it cannot be otherwise, may be described as voluntary. Such a use of the terms necessary and voluntary had in fact already become common among the Church Fathers long before Augustine. Thus the generation of the Logos from God, which was eternal and could not be otherwise, was described by the early Church Fathers as a voluntary act on the part of God, voluntary as used of that which is not necessary in the sense of being compelled by an external force. It was only when Arius used the term voluntary to imply that the Logos was created *ex nihilo* that the Fathers rejected that term and substituted for it the term natural,[68] using it, again, as the opposite of necessary in its use as that which is compelled by an external force—a sense in which the term natural is also used by Aristotle.[69] Augustine himself follows this usage of the term natural in the case of the generation of the Logos.[70] Moreover, the internal tendency, called by Aristotle nature, by which the simple elements have their uncompelled motion, is called by Augustine love (*amor*).[71] And so when Augustine argues that man sins or acts righteously not by necessity but by will on the ground that he sins by delight and love and acts righteously by charity, he means thereby that when man sins or acts righteously not by the necessity of an external force but by the necessity of an internal tendency, his action may be described as voluntary, even if it could not be otherwise.

[62] *Sermo* 153, 8 (PL **38**, 830).

[63] *Enarrationes in Psalmos*, Ps. 9, No. 15 (PL **36**, 124); *cf.* Ps. 31, Enarr. 2, No. 5 (260).

[64] *Cf.* above at n. 28.

[65] *Cf. Contra Julianum Opus Imperfectum* III, 114 (PL **45**, 1296).

[66] *Metaph.* V, 5.

[67] *Ethica Eudemia* II, 8, 1224a, 9 ff.

[68] *Cf.* my *Philosophy of the Church Fathers* **1**: 223–232.

[69] *Phys.* VIII, 4, 255a, 28–29.

[70] *De Trinitate* XV, 20, 38. Later, in order to express the view that Jesus acted without external compulsion, Maximus Confessor describes Jesus as acting both by will and by nature (*cf.* my *Philosophy of the Church Fathers* **1**: 485–486).

[71] *De Civitate Dei* XI, 28.

This conception of relative free will is more clearly brought out by Augustine in two passages.

In one of these passages, a Pelagian opponent of Augustine argues that necessity and free will are mutually exclusive terms, and so Augustine is wrong in maintaining that sin is both necessary and voluntary. To this Augustine's answer is as follows: "If you knew what you were saying, you would not make the statement that necessity and will could not exist simultaneously. Death is a necessity, and yet would any one dare deny that it could also be an object of voluntary desire?" [72] What Augustine means to say is that natural death, coming as it does not by external but by internal causes and is inevitable and cannot be otherwise, may still be described as something voluntary, as when, for instance, the dying person, for some reason or other, happens to welcome death.

In another passage,[73] Augustine tries to show that, if necessity is defined as that "according to which we say that it is necessary that anything be of such and such a nature or be done in such and such a manner," then that kind of necessity does not take away "the freedom of our will," that is, it does not make us act by compulsion. He illustrates it by such a proposition as "God is immortal" or "God is infallible," which, he argues, does not mean that because God must live forever and cannot die or because He must foreknow all things and cannot be wrong that He has life and foreknowledge by compulsion. By the same token, he also argues, man's action, whether sinning or acting righteously, is not to be described as compelled because of the fact that man could not but sin under concupiscence and could not but act righteously under grace. What Augustine means to say is quite evident. Man's action, though always determined either by concupiscence or by grace and could never be otherwise, is still to be described as voluntary on the ground that concupiscence and grace are within man himself, so that man's action, when only so determined, flows from his own nature and is not compelled by any force external to it.

Freedom thus to Augustine does not mean the choice to act one way or the other, for there is no such freedom; everything is determined to act only one way. Freedom is only relative, and it means to act according to one's own nature, without external compulsion. It is in this sense that man is free either to sin or to act righteously, for each man has a determinate nature either to sin or to act righteously. Men, according to Augustine, are not all of one nature. There are two kinds of human beings and correspondingly two kinds of human natures, and each man belongs either to the one or to the other. For Augustine, the old definition of man as a rational animal would not do; for him, some men are concupiscent rational animals and some are grace-endowed rational animals. And he has a theological explanation for this division of mankind. Prior to the creation of the world, God in His infinite wisdom, for reasons unknown to us, had elected out of the future sinful lump of humanity a certain number of persons whom He "predestined to grace" [74] or to "everlasting life" [75] or "to reign eternally with God." [76] They are those whom Augustine calls by the New Testament term (Rom. 8: 33) "the elect" (ἐκλεκτοί, *electi*). These are governed by grace, and grace constitutes their nature. For them to do good is to act by the necessity of their own nature, and without external compulsion. They are thus free. Those who were not elected for grace or for everlasting life or for eternal reign with God are called by the New Testament term (II Cor. 13: 5) "the reprobate" (ἀδόκιμοι, *reprobi*), that is, the not-approved, the rejected, the castaway, and are described by Augustine as those "predestined to eternal punishment" or "to condemnation." These are governed by concupiscence, and concupiscence constitutes their nature. For them to sin, is, again, to act by the necessity of their own nature, and not by external compulsion. They are thus also free. And in support of such a restricted conception of freedom he quotes the Stoics, though not without a grumble against their particular classification of causes.

These are some of the philosophical implications of one of the problems involved in the Pelagian controversy. I have stated the problem in the form of a thesis and presented it in its bare outline, with only partial documentation and without discussing different interpretations of passages cited and recalcitrant passages not cited.

[72] *Contra Julianum Opus Imperfectum* IV, 103 (PL **45**, 1398).
[73] *De Civitate Dei* V, 10.
[74] *Enchiridion* 100.
[75] *De Anima et Ejus Origine* IV, 11, 16.
[76] *De Civitate Dei* XV, 1, 1.

And let us now add one concluding remark. The name-calling, especially with regard to Pelagius, is still a favorite pastime among some historians of dogma. Pelagius is still called a pagan, a Stoic, a follower of the New Academy, and, in fact, everything in the history of philosophy disliked by the particular historian dealing with him. Augustine is represented as the exponent of true Christianity and his concupiscence is being heralded as an anticipation of the Freudian libido. In our judgment, Pelagius, on the problem of freedom, represents the original Christian belief. It was Augustine who introduced something new from without. On the showing of his own statements, his doctrine of grace is only a Christianization of the pagan Stoic doctrine of fate. As for his concupiscence, it is not clear whether it is based upon his own personal experience before his conversion or whether it is based upon a misunderstanding of the Vulgate Latin translation of a Greek verse in the Book of the Wisdom of Solomon.

HISTORY OF THE YIDDISH LANGUAGE: THE PROBLEMS AND THEIR IMPLICATIONS

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THE history I am to deal with extends over more than a thousand years, and besides I have promised "problems" and "implications"; so you will not expect me to exhaust the subject. To make the best of the time allotted to a speaker I have, above all, imposed upon myself a rigorous general limitation. The history of Yiddish, as we shall see, testifies to strong and incessant contacts between the Jews and different non-Jewish groups. These contacts have generated a give-and-take at both ends, and in culture history interaction of this kind is an intriguing subject if there ever was one; but the impact of the Jews on other groups, no matter how strong, has been mercilessly cut out from the present paper. As for the exposition itself, I shall merely try to bring into focus a number of suggestive ideas and facts. But before I do so, I should like to express my thanks for the kind invitation to speak before this illustrious Society on a topic which is so close to my heart.

1. How do we go about establishing the age of Yiddish? One's first impulse is to look for the oldest documents, all the more so since the Jews are known to have been literate long before Yiddish came into being. Now, the earliest dated Yiddish literary text, recently discovered among the treasures of the University Library in Cambridge, England, is marked 1382.[1] But the text was written (or copied) in Egypt, of all places, far away from the regions where Yiddish originated and grew, and the poems contained in its eighty-four pages bear the marks of notable refinement which it must have taken time to attain. Thus, the Cambridge manuscript is definitely not the "birth certificate" of Yiddish.

On second thought, the very "birth" of a language is but a metaphor, and not a very happy one at that. Languages rise slowly, not by a single spectacular act; for some time, the momentous changes are imperceptible even to the speakers themselves. The evidence of linguistic history, therefore, is largely circumstantial; even actual attestations can be meaningless or misleading unless they are placed in proper perspective.

In my work on the history of Yiddish I have become aware of a three-stage sequence which, I suspect, may be valid in other cases as well. First, the specificness of the language under study as contrasted with similar or related languages has to be laid open, and this can best be done with reference to the modern period where the language is seen in broad daylight. In the case of Yiddish, the most striking single clue is its fusion character. Please note the correlative terms: stock language, fusion, component. To begin with, there are several solids, the stock languages; under peculiar circumstances, certain portions of these stock languages reach their melting point. Then, fusion takes place. The affected "certain portions" of the stock languages now emerge as the components of the new fusion language. It is a unique linguistic structure apart from the stock languages and is governed by rules of its own. Fusion thus can be defined as a continuous and cumulative process of systemization.

Once the specificness of the language is determined, the linguistic historian takes his second step. Presently, he must bring to light the peculiar extralinguistic circumstances which made the emergence of such a linguistic entity possible. The *terminus a quo* for Yiddish is found in the ninth and tenth centuries, when Jews from east-central France and northern Italy started settling in the Middle-Rhine region. They brought with them as their vernaculars two versions of Laaz (Jewish languages of Romance stock); their sacred tongue was Hebrew; in the area of their new settlement, German dialects were spoken by the coterritorial non-Jewish

[1] Fuks, L., *The oldest known literary documents of Yiddish literature (ca. 1382)*, 2 v., Leiden, Brill, 1957; Fuks, L., The oldest dated work in Yiddish literature, *The field of Yiddish: studies in language, folklore and literature*, 267–274, New York, Linguistic Circle of New York, 1954; Gininger, Ch., A note on the Yiddish Horant, *ibid.*, 275–277.

population. That's how Yiddish originally came to consist of three components: Hebrew, Laaz, German. The fourth component, the Slavic, entered the fusion after the middle of the thirteenth century, when the speech community began to move into East Central and Eastern Europe.[2]

With the erection of this historical framework, the third stage of the inquiry is reached. Now the linguistic historian can apportion the purely linguistic data pertaining to the past and, conversely, lean upon linguistic items definable in terms of time and space to bolster his extralinguistic evidence. Very few attestations of the earliest period have been preserved, but there are numerous proper names which can be utilized by the linguist, and, as we move along in time, more attestations are available.[3] Precious information is secured from the great number of relics in later and modern Yiddish, fossils as it were affording glimpses of the past. Comparable phenomena in other languages, including the stock languages, also contribute to our understanding of the history of Yiddish. Gradually, the pieces of the jigsaw puzzle are fitted together and the older stages of the language can be reconstructed.

2. Four periods stand out on the basis of coinciding linguistic and extralinguistic criteria. I shall describe them here only from the point of view of the growth of the speech community.

By 1250, when Earliest Yiddish was over, the language was spoken in the Middle and Upper Rhine valley and along the Main and the Upper Danube.

Old Yiddish (1250–1500) is characterized by further spread into the Middle-Danube region and, most far-reaching in its consequences, into the Slavic East.

In the subsequent two hundred years which constitute the period of Middle Yiddish, the speech community, in the east, moved up to the frontiers of Muscovy; in the north, it reached Amsterdam and Hamburg.[4] Two regional formations solidified, Western Yiddish and East-European Yiddish, divided by an ideal line extending from the western Baltic to the Black Sea.

The Modern period, starting about 1700, witnessed the breakdown of the equilibrium between these two regional formations of Yiddish. Since the end of the eighteenth century Western Yiddish began to weaken and finally to fade away. Sizable remainders of Dutch, Alsatian, Swiss, and Hungarian Yiddish are still within reach of the student but, as a rule, when Yiddish is referred to today, only the East-European variety is meant.[5] However, it is just in the nineteenth and twentieth centuries that Yiddish has experienced its most conspicuous growth. As the Yiddish proverb goes, *got shikt tsu di refúe far der make*, God sends the remedy in advance of the affliction. The loss of territory in West Central Europe was more than compensated by the appearance of speakers of East-European Yiddish all over Western Europe and, through the great overseas migrations, in all five continents. Yiddish literature has greatly gained in stature during the last century or so.[6]

No less significant is the increase in numbers.

[2] The Jews who in the Middle Ages settled in German lands, and their descendants in all of Europe and the world over, are called *Ashkenazim* (derived from *Ashkenaz*, the medieval Jewish name for Germany). *Cf.* Weinreich, M., [Ashkenaz: the Yiddish era in Jewish history], *Yivo-bleter* **35**: 7–17, 1951. On the coexistence of Jewish subculture groups, on a typology of Jewish languages beginning with Hebrew and on the Hebrew component in Yiddish, *cf.* Weinreich, M., *Yidishkayt* and Yiddish, *Mordecai M. Kaplan Jubilee volume*, English section, 481–514, New York, Jewish Theological Seminary, 1953; Weinreich, M., Prehistory and early history of Yiddish: facts and conceptual framework, *The field of Yiddish* (see fn. 1), 73–101. On the two versions of Laaz and the Laaz component in Yiddish: Weinreich, M., The Jewish languages of Romance stock and their relation to earliest Yiddish, *Romance Philology* **9**: 403–428, 1956. (In that paper and elsewhere I used the form "loez," but some learned friends have convinced me that *Laaz* is preferable.) On the Slavic component, *cf.* Weinreich, M., Yiddish, Knaanic, Slavic: the basic relationships, *For Roman Jakobson*, 622–632, The Hague, Mouton & Co., 1956.

[3] Since Hebrew, in traditional Ashkenazic society, was the customary language of recording, Hebrew texts written by Yiddish speakers frequently reflect the speech patterns of the vernacular and thus also benefit the historian of Yiddish. *Cf.* Noble, S., [Yiddish in the garb of Hebrew], *Yivo-bleter* **41**: 158–175, 1957–1958.

[4] In Amsterdam the first Yiddish newspaper *Kurantn*, published twice a week, made its appearance in 1686.

[5] *Cf.* Weinreich, M., [Outlines of Western Yiddish], *Yuda A. Yofe-bukh*, 158–194, New York, Yivo, 1958.

[6] A number of Yiddish writers—alas, few poets so far—have become accessible in translations. For an instructive survey of modern Yiddish literature, *cf.* the introduction to Howe, I., and E. Greenberg, ed., *A treasury of Yiddish stories*, 1–93, New York, Viking, 1954; also Minkoff, N. B., and J. A. Joffe, Old Yiddish literature, *The Jewish people, past and present* **3**: 145–164, New York, 1952, and Niger, S., Yiddish literature in the past two hundred years, *ibid.*, 165–219. These essays, to be sure, contain many debatable points. The interlocking of literary and linguistic research is exemplified in Hrushovski, B., On free rhythms in modern Yiddish poetry, *The field of Yiddish* (see fn. 1), 219–261; *cf.* also Weinreich, Uriel, Yiddish poetry, *Dictionary of poetics*, New York, Philosophical Library (in press).

There were hardly more than fifteen thousand people in the Yiddish nucleus by the time of the First Crusade. For 1800, two million might be a fair estimate of the speakers of both Western and East-European Yiddish. And there were over ten million speakers of East-European Yiddish alone in 1939, before the Germans under Hitler undertook to destroy the Jewish people in Europe and managed to do such a thorough job.

But I must stick to the drama within the language itself.

3. I should like to come back for a moment to the subject of fusion. The new point to be stressed is that fusion has worked not only across the components; within each component, too, linguistic items coming from different centuries, regions and social strata have been fused. In the Hebrew component, the Biblical, Talmudic, and post-Talmudic strata of the stock language are blended. Within the Laaz component, elements of Western and Southern Laaz, the Jewish correlates of Old French and Old Italian, respectively, were fused. The Slavic component has absorbed elements of Czech, Polish, Ukrainian, White Russian and, to some degree, Russian.

In the German component, the fusion processes are at least as manifest. Even before 1250, Yiddish was spoken from Cologne to Basle and from Mayence to Ratisbon and beyond. Thus, from the outset, different varieties of German must have contributed to coterritorial Yiddish. When the speech community put down roots in the Middle-Danube region and in the post-Slavic territories of what was later called Eastern Germany, Yiddish was affected by still more varieties of German dialects. Small wonder then that a great many features in the German component of Yiddish can also be found in regional varieties of German. But no matter how many coincidences of this kind are piled up, neither in Yiddish in its entirety nor in any particular section of Yiddish can the whole German component be identified with any single German dialect. The "raw material" of the stock language has been reworked so as to fit into the new linguistic structure.[7]

By definition, fusion must have set in as soon as the new language began to form. But there still remains the question of tempo and degree, and I must confess I myself was amazed to discover how far fusion had advanced in the period of Earliest Yiddish, i.e., before the middle of the thirteenth century. Systemization resulting in patterning divergent from that in any of the stock languages shows not only in vocabulary and word formation but, most remarkably, in phonology as well. Phones which, coming from different stock languages as they did, had been but similar, here in the new speech medium began to converge into definite phonemes and, by the end of the period, were forming a phonemic pattern which was peculiar to Yiddish only.

In the history of Yiddish, this continuous and cumulative process of systemization is a major factor indeed. But Yiddish is not the only language in which fusion-type phenomena can be observed; suffice it to contrast English or Rumanian with Lithuanian or Icelandic.[8] Thus, the insight derived from Yiddish can be profitably applied by students of other languages as well. Furthermore, an understanding of fusion processes contributes to a typology of linguistic change, and thereby fusion also becomes the concern of general linguistics as it deals with systems. After all, there can be no linguistic system without a preceding stage of systemization.

4. The earlier statement on the relationship between the German component of Yiddish and the German dialects (see § 3) needs some qualification. True, many German dialects have left their imprint on Yiddish, but on closer scrutiny it turns out that, exclusive of a few ambiguous cases, they all belong to what is called High German, i.e., to the dialects of southern and central Germany. When, around 1600, Yiddish became coterritorial with Low German and Dutch, they did not exert any appreciable influence even on Western Yiddish, except in the

[7] On fusion within and across the components, *cf.* Weinreich, M., [Yiddish phonology as a clue to Medieval Hebrew], *Yivo-bleter* **41**: 101–123, 1957. Mieses, M., *Die Entstehungsursache der jüdischen Dialekte*, 115, Vienna, 1915, effectfully pitted against one another divergent and mutually exclusive opinions of seven authors concerning the German dialects from which Yiddish (i.e., the German component of Yiddish) "stems," but on p. 106 of the same book ventured an equally unwarranted assertion of his own. It is to N. Prilutski's credit to have come out, in 1917, with the statement that there was no congruity of any Yiddish dialect with any specific German dialect; *cf. Yidish far ale* **2**: 72–73, 1938. From the point of view of social origin, the elements of the German component of Yiddish also, in the beginning, were heterogeneous; their present unity is due to the fusion. The acceptance of peculiar German elements was dependent on the cultural contacts of the Jewish community with different social strata among the speakers of German. See the Postscript to this paper.

[8] On the ideal types of "fusion language" *versus* "lineal language," *cf.* my paper in *Romance Philology* (see fn. 2), 403–404.

areas of immediate contact. This is particularly startling if compared with the impact of Slavic on Yiddish all over Eastern Europe. On general principles, one would expect the Germanic structures of Low German and Dutch to have left deeper traces in Yiddish with its large German, albeit High German, component. Is the difference simply due to the fact that the contacts with Slavic started several hundred years earlier or was the range of contacts, for extralinguistic reasons, so much larger as to outweigh the disparity in structure? It may be relevant to the case that the Yiddish speech community, in at least part of the Slavic lands, absorbed the speakers of some versions of Knaanic, the Jewish correlate of Slavic. Probably there are more hypotheses worth pondering and testing but, be this as it may, one thing is evident: it is not always genetic closeness that decides in matters of acceptance or rejection when "foreigners" knock at the gates of the language.

The consequences for Yiddish of meeting with the Slavic languages have been intense and indelible. Beginning with the Middle Yiddish period, we may speak of affinity between Yiddish and Slavic as opposed to relations based on more or less extensive borrowing. This affinity shows in many domains of culture (customs; proverbs, folk songs and folk tales; architecture of houses of worship, etc.); naturally, it also shows in language. The distribution of many phonemes in Yiddish has changed and some new ones have appeared in the repertoire. New varieties of inflection were introduced, such as verbal forms reminiscent of the Slavic aspects. Word formation, syntax, prosody were affected, not to speak of the vocabulary which was enriched by many loanwords but, even more so, by a reshaping of phraseology and idioms after Slavic models.[9]

5. The preceding discussion may have given the impression that the research problems of Yiddish were all in the realm of "foreign policy." This, of course, is not the case. Let me turn to some problems which refer to the internal development of the language, regardless of its composition.

Dialectal diversity is what we expect to find in a language spread over so vast an area. What is peculiar to Yiddish is that it has developed a highly transparent dialect arrangement which, fundamentally, can be described in terms of relatively few vowel alternations. The basic division into Western and East European Yiddish still stands, but in the East European type there is a new split into Central and Eastern Yiddish, the latter again subdivided into Northeastern and Southeastern. Among the three Eastern European varieties, the alternations are so regular as to be predictable, and they can be expressed in "vowel equations": the *u* of one dialect, for instance, will as a rule appear as *i* in another, most *o* of one as an *u* in another, and so on.[10]

These Yiddish "codialects" are somewhat like a test case in a more general sense. The formation of regional varieties, just as that of the language as a whole, is the outcome of a slow-paced process of systemization. Thus, language even on the synchronic plane reveals itself as a coexistent system of systems, not as a system pure and simple.[11] But many points covered by this definition are still obscure, and the Yiddish dialects which formed rather late and achieved such a degree of perspicuity, can shed light on many a problem in the confrontation of language and dialect. Many single items in the Yiddish dialectal sound patterns did exist earlier, but it was in the course of the seventeenth century that the dialects congealed as entities recognizable by their main present-day isoglosses. "Main" should be emphasized, if only because of the fact that there has been further evolution in the dialectal characteristics themselves.[12] But there is also ample proof that in the time which has elapsed since the seventeenth century many small-area features were given up in favor of

[9] *Cf.* Joffe, J. A., [The Slavic element in Yiddish], *Pinkes fun Amopteyl Yivo* **1**: 235–256, 296–312, 1927–1928; my article in *For Roman Jakobson* (see fn. 2); Weinreich, U., Yiddish and colonial German in Eastern Europe: the differential impact of Slavic, 369–421, *Amer. contributions to the Fourth Intern. Congress of Slavicists, Moscow, 1958;* Wischnitzer, R., Mutual influences between Eastern and Western Europe in synagogue architecture from the 12th to the 18th century, *Yivo annual of Jewish social science* **2–3**: 25–68, 1947–1948.

[10] These vocalic diaphonemes on the synchronic plane tie in with the set of protophonemes which give perspicuity to the diachronic development of the Yiddish vowel system. I have arrived at a set of twenty such "starred" vowels: three /a/ phonemes, five /e/ phonemes, and four of /i o u/.

[11] *Cf.* Weinreich, M., *Year Book Amer. Philos. Soc. for 1955:* 369–370, 1956.

[12] A number of "frontier revisions" did occur subsequently. For some examples, *cf.* my paper in *Yuda A. Yofe-bukh* (see fn. 5), 170–171, 173–176, 192–194, and Weinreich, U., *Sábesdiker losn* in Yiddish: a problem of linguistic affinity, *Word* **8**: 360–377, 1952. For a reconstruction of earlier stages of the Yiddish dialects, *cf.* Weinreich, U., A retrograde soundshift in the guise of survival: an aspect of Yiddish vowel development, *Estructuralismo e historia, miscelánea homenaje a André Martinet* **2**: 221–268, La Laguna, 1958.

large-area conformity. It may therefore be said that the Yiddish dialects are not only an expression of diversity. Viewed from a different angle, they exemplify a definite trend toward a koine through the intermediate stage of regional consolidation. This growing uniformity is quite independent of, and partly precedes, the conscious efforts at language standardization; but it does lead in the same direction.

6. Time was when planned standardizing was branded by many linguists as the schoolmasters' meddling in affairs that ought to be left to nature, and therefore unworthy of scholarly attention. But consistent as this position seems to be, it rests on fallacies. Any language is the carrier of a culture, but it appears that only a standardized language, at least nowadays, can become a carrier of a civilization, and it is certainly within the province of the linguist to find out what it is that gives a language this added dimension. Moreover, the designs of the norm setters must be assumed to be defined by linguistic and cultural circumstances, and so is the varying receptivity of the public to the norms recommended. In short, there is more than one reason why standardization is a legitimate object of linguistics and Yiddish here, too, offers some object lessons.

In the period of Old Yiddish, with the growth of Yiddish literature, a literary vehicle developed which served the whole speech community regardless of regional differences. In its early stages, two basic types can be recognized, both fairly uniform and both highly stylized, i.e., widely differing from the spoken language. One was modeled after the Hebrew of the Bible and the liturgy, the other after the language of Middle High German minstrel poetry.[13] As time went on, the two types moved closer to each other and to colloquial Yiddish. No variety of this so-called First Literary Language ever was intended for oral communication, but in writing it continued to be used in hundreds of books well into the eighteenth century and, although it was grounded on the Western-type speech varieties, it was also used by East European Yiddish speakers who became more and more prominent in the literary field.

When, however, by the end of the Middle Yiddish period the center of gravity in the speech community had shifted from Western to East European Yiddish, the old literary vehicle broke down and the Second Literary Language made its appearance. This new medium is based on the Central and Eastern dialects.

The new common language also started as a compromise formation for written purposes only, with the authors attempting to keep clear of their grossest dialect peculiarities in order to reach as wide an audience as possible. Yet, eventually this modest compromise became the point of departure toward a standardized language both on the written and the spoken level.[14] This transformation was caused by the profound social changes in the East-European Jewish community which, ultimately, were precipitated by the industrial revolution.

7. Strange as it seems, the effects of these historical events on the Jews have not yet found their fully accepted interpretation. All too often, the clichés of "medieval ghetto" and "enlightenment" are invoked to explain what is called isolation from and subsequent absorption by the non-Jewish environment, respectively.[15] But the Jews were never isolated from the outside world, and, if no other evidence were available, Yiddish proves the point. Had the Jewish newcomers to the Middle-Rhine region been isolated from their environment, the German component of Yiddish could not have assumed its actual proportions; nor was there ever a time when the pressure of German on coterritorial Yiddish might have stopped. Yet, the alternative to isolation was not absorption, but separateness.

[13] There was a third major style, also widely used for several centuries. This language of community records and similar documents is not referred to in the text because, technically, it exceeds the limits of Yiddish. There was in it not only what may be called an overgrowth of the Hebrew component but, also, such an exorbitant intermixture of Hebrew proper that often the boundaries between the two languages were blurred; *cf.* Weinreich, U., [The mixed Yiddish-Hebrew style of Jewish community scribes], *Leshonenu* **22**: 54–66, 1957–1958. There is no doubt, however, that this style category, too, has to be included in a comprehensive examination of style properties in Yiddish. On the Hebrew-type style, *cf.* N. Leibowitz, Die Übersetzungstechnik der jüdisch-deutschen Bibelübersetzungen des XV. und XVI. Jahrhunderts, *Beiträge zur Geschichte der deutschen Sprache und Literatur* **55**: 377–463, 1931; S. Noble, *Khumesh-taytsh*, New York, Yivo, 1943. On positing styles within the literary language instead of independent literary entities, *cf.* my note in *Tsaytshrift* **2–3**: 700–701, 1928.

[14] Before long, this super-dialectal linguistic formation, in turn, began to affect the dialects. *Cf.* Z. Rejzin, *Gramatik fun der yídisher shprakh* **1**: 35, Vilna, 1920. (In Yiddish words of more than one syllable, the stress is usually on the one before last; wherever this is not the case, this is indicated in the present article by the ′ sign on the stressed vowel.)

[15] *Cf.* my paper in the *Mordecai M. Kaplan jubilee volume* (see fn. 2), 490–491.

The Jews were a culture group of their own, and here again Yiddish is a case in point. If not for this separateness, the Jews would have been linguistically swallowed up by the Germans soon after their arrival; instead, a fusion language came into being in which the non-German components play such an outstanding part.[16]

However, separateness does signify different things at different times, and in this respect the eighteenth century must be considered the great divide.

What separated the pre-eighteenth-century Jewish group from its environment was religion, this term to be understood in its widest sense, as a way of living and thinking. At that time, a subgroup of "non-religious Jews" would have been a *contradictio in adiecto*. Not that the Jews were devoid of worldly interests, but, usually, everything had to be put in some reference to religion. Thus, in traditional Yiddish literature, even the most renowned works of fiction intended, or else pretended, to edify the public. The language itself also mirrors this peculiar cultural configuration. In the first place, Yiddish was the medium of an "un-Christian" community; traditional Yiddish, therefore, just as traditional Hebrew, did not need and did not have the words corresponding to *Saviour*, *salvation*, *virtue*, *vice*, *original sin*, and the like which are a must in every "Christian" language. But what counts even more heavily is the fact that Yiddish proverbs, metaphors, idioms and so on to a very large degree are couched in Jewish religious terms: as in any other language, traditional phraseology reflects the conceptual and material world of the speech community.[17]

8. Early in the nineteenth century, East European Jewry started moving away from what may be called a folk society, and in the twentieth century a stratified society along modern lines had taken shape.[18] As a corollary of this transition, a strong secular sector made its appearance whose members, in consonance with the growing trend of nationalism in large parts of Europe, preferred to think of the Jews in ethnic-group terms pointing to common language, folkways, and historical experience. The literature, the trade, educational, and political organizations, the school systems that sprang up as a result of new cultural and social aspirations were largely divorced from the religiously colored ideas and behavior patterns of old; sometimes they ran counter to Jewish tradition. Simultaneously, however, the traditionalist sector has continued to exist; so there was no complete break in continuity but rather a juxtaposition of two culturally differentiated camps within the same community, with many intermediate groupings defying exact definition of allegiance.

It is easy to see how much the scope of the language was widened by the addition of the secular sector. For the multitude of new concepts, new words were needed, and it is worth while to ask which part of the vocabulary was acquired by borrowing from the outside and which by coinage utilizing the available word-forming devices. But in the context of religious *versus* secular sector there is even a more significant phenomenon: that of neutralization. Idiomatic imagery is lagging behind in many languages, if not in all of them, and concepts freely used in metaphors often appear obsolete if projected against the background of present-day realities.[19] Accordingly, a blending of old and new takes place and large portions of Yiddish phraseology which, in their literal meaning, plainly reflect traditional Jewish concepts, in their actual application may have a twofold connotation; while to the traditionalist they still have the old familiar ring, they are used by those in the secular sector to express their westernized modes of thinking.[20]

[16] One of the manifestations of cultural separateness is the fact that the Ashkenazic Jews always had channels of culture communication with the world at large, not necessarily through their intermediate non-Jewish environment, from the period of Earliest Yiddish down to our time. In the twentieth century, the Jewish community in Eastern Europe, through the Yiddish speaking community in the United States, was experiencing much stronger American influence than their non-Jewish neighbors. These impulses from afar, with their linguistic repercussions, are a promising avenue of research in Jewish culture history.

[17] In details, there are exceptions. For example, the Yiddish equivalent of "Where there is smoke, there is fire" is *az men klingt iz khoge*, literally: "When the [church] bells ring there is a [non-Jewish] holiday." Further studies of Yiddish imagery may lead to more specific formulations than the one given in the text.

[18] The social and cultural changes which affected the Jews in West Central and Western Europe are not outlined here, since, in the present section, developments in East European Yiddish only are discussed. On the transition from the First to the Second Literary Language, *cf.* Weinreich, M., [Yiddish], 60–62, *Algemeyne yidishe entsiklopedye*, supplementary volume *Yidn* B, Paris, 1940; Joffe, Judah A. [One hundred and fifty years of Yiddish], *Yivo-bleter* **15**: 87–102, 1940.

[19] In the space-ship age, English speakers still worry about *putting the cart before the horse*.

[20] Just one illustration: *az men fregt a shayle iz treyf* "if you ask for permission you will be refused [,so better act on your own]," but literally the sentence means "if you

Another consequence of the social change in the Jewish community has been the strong move in the direction of a standardized language. With the increase in territorial and social intercourse, the regional koines became insufficient. First, cultured persons would attempt to speak the "literary language," but in pronunciation they still clung to their local phonemic patterns; communication was possible owing to the easy convertibility of regional speech patterns in accordance with the vowel equations of the codialects (see § 5). In the last half century or so a spoken standard has evolved, too, and a great part in this development must be ascribed to the "colonial" branches of the speech community, notably to Yiddish speakers in the United States.

9. A considerable catalogue of problems has been assembled in the course of this brief survey: fusion; affinity with coterritorial languages; dialect formation; standardization, first on the written and afterwards also on the spoken level; language and religion in their interrelation; the effect of migrations on linguistic change. Many more research problems were barely touched upon or could not even be mentioned at all: bilingualism, intragroup (Yiddish and Hebrew in the cultural economy of the speech community) and intergroup (Yiddish and the coterritorial non-Jewish language, or languages), intonation, styles and stylization, age and status differentials in linguistic change, and so on. As in the case of fusion (see § 3), it can be shown that the answers to these questions also are relevant to the study of other languages and to general linguistics.

It was only on the eve of World War II that the students of Yiddish began to turn to problems of this kind.[21] In the preceding decades, Yiddish philology—this was the designation most frequently used—had taken its place among the various Jewish studies and was concentrating on the development of language, literature, and folklore as such, without paying more than passing attention to conclusions of a more general nature. In the war, and after the war behind the Iron Curtain, our ranks were severely depleted but, fortunately, new men and women have come to the field of Yiddish,[22] and in the meantime interest has definitely shifted to the more general aspects. This is all to the good and this, as I see it, is the reason for the steadily growing interest of outside scholarly circles in Yiddish linguistics and the adjacent areas of folkloristics and literary research. In addition to the Yivo Insitute of Vilna, which was salvaged from its ashes and re-established in New York, chairs in Yiddish have been founded in the postwar years at several universities, and more may follow.

But it is precisely at this juncture, I believe, that we should take a careful look at the requirements for proper training of novices in Yiddish linguistics.

A Yiddish scholar must know the language itself in its various phases and be familiar with the stock languages, particularly with those variants of them which directly affected Yiddish. General linguistics will furnish the basic research tools. However, experience shows that this strictly linguistic training is not enough. Any item in Jewish culture, including language, is also a link in the chain of Jewish tradition going back to Antiquity, and sometimes the past is surprisingly powerful in defining the everyday behavior of people, including linguistic behavior, many centuries later. Studies in Yiddish, therefore, must be intertwined with studies in actual Jewish culture and in Jewish and general cultural history. And let me state it bluntly: this large order is aimed not only at the "narrow specialist," as the saying goes. As in any other research, truly valid generalizations can be expected only from meticulously executed specialized studies.

To put it differently: linguistics must be autonomous in its methodology; but heavy damage is done if it claims sovereign independence.

Obviously, no individual can be supposed to know everything; the broad frame of reference applies to the field as a whole. But every aspir-

ask [the rabbi] whether a certain thing is kosher or not, [the reply] will be: nonkosher." Many quotations from the Bible, the Talmud, and the liturgy, of which Yiddish is replete, have been reinterpreted in a similar manner. The broadening of connotations must have started in traditional Jewish society, but it was not before the twentieth century that neutralization reached its present extent. It is not the immediate concern of the linguist how much the Jewish traditionalist sector, on its part, has been affected by the trend of secularism within the community. But the linguist has to delve into the problem of the effects of the "secularized" language on traditionalistic speech and writing.

[21] *Cf.* Weinreich, M., *Le Yiddish comme objet de la linguistique générale*, Vilna, Yivo, 1937, a paper read at the Fourth International Congress of Linguists in Copenhagen, 1936.

[22] A Conference on Yiddish Studies, cosponsored by the Yivo Institute, Columbia University, the Hebrew University in Jerusalem and the City College of New York, was held in New York April 7–10, 1958. Of the thirty-six papers presented by scholars from six countries, twelve were by persons who on the eve of World War II were still of high-school age or below.

ing scholar should be made aware of the exigencies of training as well as of the fascinating vistas. On the other hand, it would be sheer waste to compel each newcomer to the field to act as a trail-blazer all over again. It is the responsibility of the scholarly oriented community to provide the balanced programs, the bibliographies, the institutional facilities. Surely, the humanities and social sciences have coped successfully with more exacting interdisciplinary needs. What is needed in our case is chiefly bold coordination of opportunities which already exist.

POSTSCRIPT: COMPONENTAL STATISTICS

Because of the effects of fusion, the question about the proportion of the different components, often posed and legitimate at its face value, is most difficult to handle. Leo Wiener's statement, *cf. Jewish Encyclopedia* **7**: 305, New York, 1904: ". . . 70 p.c. of German, 20 p.c. of Hebrew and 10 p.c. of Slavic words," was probably nothing but guesswork; at any rate, neither the size of the sample nor the criteria of classification were ever revealed. In the first place, there must be agreement about what is to be counted. Are we interested in word bases only or do we include in the count prefixes and suffixes as well? In the former case, *balebátishkayt* "household; (system of) economy" and *balebáteven* "to manage; to rule" belong to the Hebrew component; but *-ishkayt* in the noun and *-(e)n* in the verb happen to have come from the German component and *-ev-* in the verb, from the Slavic component, and the suffixes are still widely productive. This leads to another question: do we consider only the existence of a certain item or also the frequency of its occurrence? Then, what about the hundreds of cases in which outer and inner form differ. *Âkhberosh* "rascal" is composed of two Hebrew bases, "mouse" and "head," but the compound appears in Yiddish only and was modeled, as Alfred Landau has demonstrated, after the German slang expression, now obsolete, *Maus(e)kopf*. The verb *áynnemen* is reminiscent of Modern German *einnehmen* and actually has some of its meanings, but it also has acquired from Slavic the meaning of "to calm (e.g., a child)." For some particularly instructive examples, *cf.* Weinreich, U., Yiddish blends with a Slavic element, *Word* **11**: 603–610, 1955. The Laaz component does not figure significantly in any numerical analysis since it has been constantly shrinking over the centuries.

There is one more obstacle to a crude computation of numbers. It will be realized that in a fusion language the interplay of acceptance and rejection, ever present in linguistic change, is based on one additional criterion, that of component. This also applies to relative, or partial, acceptance or rejection, i.e., to cases where certain linguistic items are admitted only under certain circumstances. Consequently, many items, though they will appear in the general lexical inventory of the language, can be understood in their proper function only if the setting in which they are used is described. Down-to-earth conversation, slang-crammed speech, epic poetry, moralizing treatises each will apply a different yardstick with regard to the criterion of component, too. This is where the problems of styles and of stylization come in. Y. Mark, A study of the frequency of Hebraisms in Yiddish, *The fiel of Yiddish* (see fn. 1), 28–47, cited some of the difficulties involved in making a clearcut distinction between componental items. After analyzing three million running words in sixty different style groups, he arrived at a range of from 1.52 to 16.07 per cent ascribable to the Hebrew component.

To avoid distortions in the picture of the language as a whole it must be remembered that inquiry in the origin of the vocabulary constitutes but one way of looking at linguistic facts. Diachronically, it is of great interest to know that of the three exclamations *riboyne shel oylem*! "Lord of the Universe!" *gotenyu*! "dear God!" and *got mayner*! "my God!" the first belongs to the Hebrew component, and the third to the German, while the second is the result of a fusion between a German-component base and a Slavic-component suffix. On the synchronic level, however, all constitutive elements within the linguistic system are evaluated on their own phonemic, morphological and stylistic merits, regardless of provenience. By virtue of the existence of Yiddish as a linguistic system, *shvarts* "black" is no "less Yiddish" than *grin* "green" or *royt* "red" because it also appears, in the very same form, in Modern German *schwarz*, nor is the singular *balebós* "head of a household; master; community member" any "more Yiddish" than its plural *balebatim* because the latter happens to be closer in pronunciation to its classical-Hebrew counterpart. Structural linguistics has taught us that single items may appear, in similar or even identical form, in several systems simultaneously; it is the system that matters.

TAKANO FUSATARO: A STUDY IN EARLY JAPANESE TRADES-UNIONISM

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ONE of the most impressive results of the Allied Occupation of Japan was the phenomenal growth of trade and labor unions. With the early encouragement of American Occupation authorities, Japanese workers hastened to organize themselves, so much so that within a period of a few years over 32,000 unions with a total of more than six million members had been brought into existence. Not only have these unions worked many changes in traditional social and economic practices but, by entering the political arena, they have offered a powerful challenge for leadership in government. Because of the trade-union movement in Japan today the interests of workers are protected as never before and the people of Japan are provided with the political choices and alternatives essential for the further growth of democracy.

Much as many Americans may pride themselves, and justifiably so, upon their achievements in Occupied Japan, there is reason to believe that the rapidity of labor's organization was not due solely to the fiats and blessings of the military conqueror. The swift emergence of trade-unions did, to be sure, reflect an obedient response to the urgings of the occupying forces, in keeping with the respect traditionally accorded authority in Japan. But it may also be maintained that the large-scale organization of labor represented an explosive release of the long pent-up frustrations of countless workers, particularly of the older generation, who had for years known only repression and regimentation. Not to be overlooked is the fact that the Occupation authorities had at hand a labor force which was not entirely ignorant of the purpose and functions of trade-unions.[1]

At the time of the surrender Japanese workers had, as befitted a people with seventy-five years of industrial experience, a history, however mottled, of trade-union organization and activity. Much of this history was unfortunately unwritten. Political conditions in Japan before 1945 as well as the general lack of interest by westerners in Japanese labor history scarcely encouraged scholarship on the subject. Save for an all too brief period during the "liberal 'twenties" in Japan, what writing on Japanese labor history appeared was usually the product of unsympathetic extremists, of labor leaders too deeply enmeshed in the events they described to be dispassionate, and of theorists with few, if any, ties with the working people. Histories of the Japanese labor movement were and are too often distorted, biased, or self-serving.

Interpretations of the history of Japanese trades-unionism are based to a very large extent upon conflicting views of the nature of the Meiji period (1868–1912). It is not disputed that this era was characterized by vital and fundamental change in innumerable aspects of Japanese life. What is deemed to be of greater pertinence is the meaning and purpose of the modernization encouraged by a state indisputably dominated by an oligarchy unsympathetic to criticism and opposition. To many Japanese the leaders of the Meiji government were remarkable statesmen who not only safeguarded successfully the precarious independence of a nation beleaguered by imperialist foes but launched their country upon a course leading to world power. To their critics the Meiji oligarchs were power-hungry and selfish politicians who destroyed all liberal and democratic tendencies and fashioned an authoritarian and imperialist regime responsible for the ultimate ruin and destruction of Japan.

However the developments of the Meiji period be interpreted, it is clear that government leaders were one and all intent upon the construction of a modern state. The attainment of this ambitious goal necessitated both an all-out assault upon the institutions and ideas inherited from the feudal Tokugawa Shogunate (1603–1868) and a deliberate campaign to create a new social, economic, and political structure. De-

[1] Explanations for the enthusiastic response of Japanese workers to trade-unions have appeared in a wide range of literature. See, *inter alia*, Suehiro, Izutarō, *Nihon rōdō kumiai undō-shi*, 2–3, Tokyo, Kyōdō Tsūshin-sha, 1951; Ōkōchi, Kazuo, *Sengo Nihon no rōdō undō*, 51 ff., Tokyo, Iwanami Shoten, 1955; and Ayusawa, Iwao, *Postwar developments in organized labor*, 35–36, Tokyo, Foreign Affairs Association of Japan, 1953.

spite the dead-weight of custom and tradition, notwithstanding the persistence of an inherited value system, the Meiji state was to achieve extraordinary results. The overwhelming victory in war with China in 1894–1895 and the valiant performance of the nation's military and naval forces in the struggle against Russia a decade later attested irrefutably to the new power and confidence of Japan.

Until 1889 the government of the Meiji Emperor was overshadowed by the samurai leaders of the several feudal states who had collectively seized power in the rebellion against the Tokugawa regime in 1868. Thereafter, the *hambatsu*, or clan oligarchy, and their hand-picked successors continued to rule the country but subject to a constitution. Potentially liberal though it may have been, this organic law of the land was immediately bent to the purposes of authoritarianism. Even had other conditions been conducive, neither political parties nor social movements could flourish in this atmosphere. Still, the Meiji era was in many ways not so basically different from Tokugawa Japan as has been alleged.

To foster the development of a modern state it was taken as axiomatic by the Meiji clan oligarchy that industrialization had to be promoted as rapidly as possible. But, as in the case of so many undeveloped countries seeking to overcome the economic lethargy and neglect of their past, Japan was to be confronted with innumerable and formidable problems. Of paramount importance was the lack of capital accumulation, managerial and technical skills, and entrepreneurial spirit. In the absence of private initiative it was, consequently, necessary for the Meiji state itself to accept the role of leadership in the program to transform the economy of the nation.[2] As an inevitable result, the government was for some years thereafter to exercise a powerful influence upon the nature and course of Japanese industrialization.

The industrial enterprises founded and developed under the auspices of the state in early Meiji times were, not surprisingly, designed to further its immediate political interests. Determined to defend the new regime against actual internal threats and potential foreign enemies, the clan oligarchy lavished its meager resources upon the construction of heavy industries and communication facilities which increasingly strengthened the newly established military and naval forces. The establishment of light consumer industries, though not entirely neglected, was left to private businessmen. Simultaneously, by the generous allotment of subsidies, by the passage of beneficial legislation, and by a host of measures designed to encourage business and industrial activity, a relentless attack was directed against the pre-modern, socio-economic structure inherited from the preceding regime. Although the progress made by public and private entrepreneurs in the years before the Sino-Japanese War was impressive principally in comparison with the state of affairs prevailing during the late Tokugawa period, industrial capitalistic policies and practices were firmly embedded in several sectors of the national economy.

This formative period in the history of modern Japan, embracing the years from 1868 to 1895, was perhaps more an era of adjustment and adaptation to the pressures of a growing nation and of an expanding world than of actual physical achievement in the modernization of the country. Japan was, in so far as the dynamism of human affairs would permit, a vast social laboratory, in which endless experiments were undertaken to the end that the nation might as soon as possible become independent, rich, and powerful. In this welter of economic change, social flux, political struggle, and intellectual ferment, workers first discovered or were apprised of their birthright. And, as in other countries first experiencing the pangs of industrialism, the pioneer champions of labor's cause in Japan were all too often intellectuals who had awakened too soon and bewildered workers who opposed the very technological changes which alone could provide a *raison d'être* for a labor movement. Because of their activity and agitation, however, a glimmering awareness that industrialization bred new and peculiar social problems was gradually aroused.[3]

Numberless epochal effects upon the develop-

[2] On the development of industry during the early Meiji period see especially the following two studies: Lockwood, William L., *The economic development of Japan; growth and structural change, 1868–1938*, chs. 2–3, Princeton, Princeton University Press, 1954; and Smith, Thomas C., *Political change and industrial development in Japan: government enterprise, 1868–1880*, Stanford, Stanford University Press, 1955.

[3] On the first flickerings of labor movements in Japan see, *inter alia*, the following: Akamatsu, Katsumaro, Nihon rōdō undō hattatsu-shi, *Shakai Mondai Kōza* **4**: 1–11, 1926; Kyōchō-kai, *Saikin no shakai undō*, 319–321, Tokyo, Kyōchō-kai, 1929; Kishimoto, Eitarō, *Nihon rōdō undō-shi*, 12–16, Tokyo, Kōbun-dō, 1950; and Ike, Nobutaka, *The beginnings of political democracy in Japan*, 101–110, Baltimore, The Johns Hopkins Press, 1950.

ment of the Japanese labor movement have been ascribed to the Sino-Japanese War. Few problems in Japanese labor history demand more complete restudy. Without entering into the particulars of the matter, it may be suggested that what is essentially a problem of history has too frequently been treated as an exercise in statistics or philosophy. It is, nevertheless, true that during the war with China the number of factories increased, the amount of capital corporately subscribed rose, and the ranks of industrial workers multiplied.[4]

What is, however, most important for an understanding of the unfolding of the labor movement in Japan is the relative rather than absolute nature of these developments. By whatever criteria that prevailed in the far more industrialized nations of the West, there simply did not exist in Japan the conditions customarily deemed necessary for the successful mounting of an organized labor movement. It is only fair to point out too that those Japanese intellectuals who actively sought to organize trade-unions in the aftermath of the Sino-Japanese War were aware of this. Their actions were thus initially of an anticipatory character, being motivated not only by a distaste for existing labor conditions but also by dread of what the future portended. Unfortunately for Japan's pioneer trade-union organizers and the workers they hoped to lead, in preparing for a future day they could not count upon the support of the armies of the proletariat yet to be.

It was under these circumstances that Takano Fusataro, who was to become one of the outstanding trade-union organizers of Japan during the Meiji Period, appeared on the labor scene. There is perhaps something symbolic in the fact that he was born in 1868, the year of the Imperial Restoration, and in Nagasaki, the city which for over two hundred years had been the sole meeting ground for Japan and the West. When Takano was ten years old, his family moved to Tokyo, where his father entered the transport and hostelry business. The next few years were a sore trial: in 1880 the elder Takano died and in 1882 the family business, which had been carried on by his widow, was completely destroyed by fire. When Fusataro had finished lower school, he moved to Yokohama. He worked there in his uncle's store and also attended the Yokohama Commercial School. In 1885 his uncle died and in the following year Takano left Japan for America.[5]

In San Francisco, Takano sought, rather understandably in view of his background and education, to maintain himself by going into business. But the general store which he opened failed shortly and, thereafter, he had to earn his livelihood by other means. During these years in the United States, Takano did not neglect his education. After attending the local commercial high school, he continued his studies, revealing particularly an interest in economics, in which he instructed himself. Of his movements in the United States almost nothing is known, save that he ultimately moved to New York City.[6]

During these years, when American industry was expanding at a mighty pace, labor strife was becoming increasingly acute as workers struggled to organize themselves into unions. In 1886, the very year when Takano stepped ashore at San Francisco, Samuel Gompers laid the cornerstone for what was to become America's most powerful trade-union structure, the American Federation of Labor. For their part, Takano, Jō Tsunetarō, Sawada Hannosuke, and several other Japanese workers in San Francisco organized in 1890 a small study group named the *Shokkō Giyū-kai* (Friends of Labor). Planning

[4] Ōuchi, Hyōe, Keizai, Yanaihara Tadao (ed.), *Gendai Nihon shōshi* **2**: 183–184, Tokyo, Misuzu Shobō, 1952, discusses the effects of the Sino-Japanese War upon Japanese industrial development very ably. See also Yanaga, Chitoshi, *Japan*, 382, New York, McGraw-Hill, 1949. For the growth of factories and workers in Japan after the Sino-Japanese War see the *Japan year book, 1907*, 383, Tokyo, Japan Year Book Office, 1907.

[5] Data on Takano's early life are based principally upon the biographical sketch in Shimoide, Junkichi, *Meiji shakai shisō kenkyū*, 244–246, Tokyo, Asano Shoten, 1932. This is based in turn upon an autobiographical account by Takano, which has been unavailable to the writer.

[6] It has been stated by some writers that Takano attended Columbia University when he was in New York. See Akamatsu, Katsumaro, *Nihon shakai undō-shi*, 35, Tokyo, Iwanami Shoten, 1955. This assertion is apparently based upon the recollection by Gompers in his autobiography: "In the 'nineties I met Fusataro Takano who was then a student at Columbia University. He became very much interested in the labor movement and came down to my office to ask me for information on our trade union movement which would be helpful to Japanese workers." Gompers, Samuel, *Seventy years of life and labor* **2**: 59, New York, Dutton, 1925. At the request of the writer a search of the student records at Columbia University covering the years 1888–1895 was made by Mr. John Mullins, Registrar of Columbia University. No record of Takano was found. John Mullins to Hyman Kublin, November 18, 1954. It is possible that Takano attended Columbia unofficially or that Gompers was mistaken about the school.

some day to return to their homeland and perceiving that industrialization was overtaking Japan, the members sought to prepare themselves for the task of assisting their countrymen to cope with the industrial-labor problems that were certain to arise.[7] Takano himself returned to Japan in the spring of 1896, just a little too late to see his brother Iwasaburō who had departed for graduate study in Europe. At home, he secured employment as a reporter for the *Japan Advertiser* an English-language daily catering to the foreign community.

Takano's views on industrial and labor problems were lastingly influenced by his stay in the United States during his intellectually formative years. Having left the land of his birth when he was still an impressionable youth, at a time when industrialization was still in its infancy in Japan, Takano remained in the United States for ten long years. When he returned to Yokohama in 1896, he was doubtless far better informed on industrial-labor developments in America than in Japan. But if absence from his homeland for so extended a period of time had deprived him of the opportunity of being an immediate observer of the transformations of a decade, it had also developed in him a lasting sense of proportion and perspective. Unlike the case of many of the prime movers in the early Japanese trade-union movement, it could never be said of Takano that, like the proverbial frog in the well, he knew naught of the sea.

A fundamental American influence in Takano's thought was a deeply instilled appreciation for industrialization and its potentialities for the advancement of civilization. Increased production by the widespread use of machines, he believed, would uplift the worker, alter his incentives and motivations, and make available to him the blessings, material and intellectual, which advances in civilization made possible. If Takano had an ultimate aim, then, it was to raise the level of civilization in Japan through the medium of industrialization and thus hasten her entrance into the ranks of the foremost nations of the world.[8]

Takano was no foe of capitalism as a social and economic system. Having great faith in its potentialities for the betterment of mankind, he hoped to make capitalism socially more rewarding and efficient rather than to strive for its displacement. Thus, while he berated capitalists, he simultaneously defended the capitalist system. In their greed for immediate profits, he insisted, the employers of labor pursued policies which, in the long run, would prove detrimental not only to their personal interests but to the collective interests of society as well. And when he railed at workers, as he so often did, it was because he felt that they in their own peculiar way were as ignorant of their individual and social interests as were the capitalists. When he became an advocate of a workers' movement, accordingly, Takano did not consider himself to be the champion of a socially partisan cause but rather an enlightened citizen dispassionately promoting the welfare of his country and his countrymen.

Takano, somewhat like Gompers, was essentially a pragmatist. The specific solution of the problems of the future Takano preferred to leave to the generations of the future. For finespun social theories he had only contempt and distrust. An idealist but rarely a dreamer, sensitive but hardly emotional, he believed that complex social and economic problems could not be mastered by the application of simple and doctrinaire formulae. Rather a practitioner of the art of the possible, he tried to aim at attainable objectives, the determination of which called for careful and realistic study. The proponents of socialism, in Takano's opinion, were mainly attracted by the "grandeur of the principle" and usually failed to consider the insuperable difficulties entailed in bridging heady theory and cold reality.[9] Socialism, communism, and anarchism were possibilities in Japan, he stated, only in the event of social cataclysm brought on by the unconscionable policies and practices of short-sighted capitalists.[10]

Takano's views on industrial capitalism reveal a close resemblance to those held by Samuel Gompers. It is understandable that Takano, who had witnessed the triumph of the A. F. of L. in its long and bitter struggle with Terence Powderly and the Knights of Labor, should have been strongly influenced in the development of his own labor creed by the outcome. That this

[7] On the founding of the *Shokkō Giyū-kai* see Akamatsu, *Nihon shakai undō-shi*, 51–52, and Katayama, Sen and Kōjirō Nishikawa, *Nihon no rōdō undō*, 18, Tokyo, Iwanami Shoten, 1952. The latter is a reprint of the original edition which was first published in 1901.

[8] Tekano [*sic*], F., Labor movement in Japan, *American Federationist* 1: 163–165, 1894. This journal will hereafter be cited as *Amerfed.*

[9] *Ibid.*, 163.

[10] Takano, Fusataro, Labor problem in Japan, *Gunton's Magazine* 11: 108, 1896.

was the sole determinant is, however, questionable. Had Takano been an American workingman, he might perhaps have taken his cue from Gompers' success. As a Japanese and with Japanese problems in mind, however, Takano had different standards of judgment and it was these, probably as much as the victory of Gompers, which led him to conclusions similar to those of the American trade-union leader.

Few Japanese who visited the West in Takano's times could fail to be impressed by the material standards of life in Europe and America, which stood in such glaring contrast to the premachine levels of existence in their own land. When they drew comparisons between conditions in Japan and the advanced countries of the Occident, the equations which they formulated were designed to have meaning for themselves and their countrymen. While the western worker complained of his condition, the Japanese observed that he was far more secure and prosperous than his counterpart in Japan. Takano himself was no exception to this. As he sought to reduce the matter to its elemental cultural terms, the Japanese laborer was rice-conscious while the American worker was meat-conscious.[11] That most American workingmen could take their bread for granted was for Japanese observers convincing enough testimony to the benefits of industrial capitalism. When Japanese travelers returned to their country with revolutionary thoughts from trips abroad, they were usually dedicated not to the destruction of the "meat-system" apparently in the making but to the elimination of the "rice-order" actually in existence.[12]

That Takano was not an uncritical disciple of Gompers, whom he otherwise respected and admired, is rather well attested by his own program for the inauguration of an organized labor movement. When he considered the difficulties of trade-union organization in the industrially advanced, politically free, and relatively literate society of the United States, he readily perceived that the Gompers formula could not be indiscriminately applied in Japan. Convinced that the single greatest obstacle to the improvement of the lot of the worker was the ignorance of labor problems which pervaded all classes of Japanese society, he emphasized the necessity for "education." [13] "We must find," said Takano,

> a few men who will take up the work of agitation and become a source of information, encouragement, energy, and action . . . the first effort toward the amelioration of the working class must be directed to arouse the thinkers of the country for the necessity of their action, [this] . . . to be followed . . . with an organization of the thinkers to discuss a practical plan . . . of educating the working people to act politically or otherwise, in order to protect the interest of the working people, and lastly, but most important, to organize the working people.[14]

In view of the social and political conditions in Japan, this program of action was, from both a practical and theoretical standpoint, extremely reasonable.

Nothing was more indicative of Takano's sifting of A. F. of L. practices through the sieve of Japanese problems than his proposed procedure for launching a Japanese labor movement. Few trade-union leaders in American labor history have had greater distrust of the "thinker" than had Samuel Gompers, who constantly insisted that only a worker could understand the worker. In part, such dogma represented a rationalization of Gompers' own position of leadership in the American Federation of Labor. Perhaps more importantly, it revealed his strong reaction to the many ill-fated American labor movements that "intellectuals" had steered down the tangential paths of politics and reformism. Not only was Gompers ever ready to dismiss these pioneer labor leaders as visionaries; he was reluctant to admit it was they who had helped so much to awaken the American workers. Takano's plan of action, with its recognition of the role of the "thinker," was a departure from the Gompers pattern; it was, however, no different from those devised by pioneer labor leaders in Europe and the United States.

When Takano turned his attention to the labor scene in Japan in 1896, he discovered that his prediction of post-war labor strife was being borne out.[15] Manufacturers vied with one another for greater profits, displaying at the same time a callous disregard for the welfare of their

[11] Takano, Labor movement in Japan, *loc. cit.*, 164.

[12] With few exceptions the extremists in the social movements of the Meiji period were men who had never visited the west or, if so, had done so only briefly.

[13] Takano, Labor movement in Japan, *loc. cit.*, 164. See also Takano, Fusataro, Our organizer in Japan, *Amerfed.* **4**: 78, 1897. For a similar view see Katayama, Sen, Labour problem old and new, *Far East* **2**: 490, 1897.

[14] Takano, Labor movement in Japan, *loc. cit.*, 165.

[15] Takano, Fusataro, The war and labor in Japan, *Social Economist* **9**: 30–33, 1895.

employees.[16] At times Japanese workers, disgruntled as much by the rise in the cost of living that had accompanied and followed the war as by their conditions of employment, spontaneously broke out in strikes.[17] Save for an occasional note of warning and plea for corrective action in the "intellectual" press, however, both government and people remained apathetic.[18] The state was apparently far more concerned with the welfare of the country than with that of the people, while a population that was still overwhelmingly agrarian had troubles enough of its own to be disturbed by the misfortunes of others.

Although Takano was not unmindful of the existence of workers engaged in the traditional crafts and trades, with considerable acumen he singled out the modern factories for critical appraisal. In the newly risen machine-equipped plants, especially those taken up with the production of textiles, he detected the most powerful corrosive of the traditional social and economic fabric. In the cotton-spinning mills of Osaka and Tokyo, where the absence of the time-honored pattern of master-employee relations deprived the worker of that element of security underwritten by custom, he saw in formation a new pattern of working conditions for Japan's industrial class of the future. "Low wages, long working hours, child labor, black list—such are the conditions existing in the cotton spinning industry," he charged, "and similar conditions are confronting the workers of other trades which are run under the modern system of industry." [19] To Takano the situation portended trouble and tragedy. "How long," he posed the ominous question, "will the workers remain in their semi-conscious condition?" [20]

In his remonstrations with Japanese manufacturers Takano attempted to employ both reason and warning. Their economic policies he labelled not only fallacious but dangerous as well. Japanese businessmen, in maintaining a depressed wage scale made possible by the ample supply of labor provided by an impoverished countryside, might well have an advantage in the promotion of foreign trade. But the perpetuation of abysmal working conditions would, he pointed out, prevent the development of a home market as well as condemn the Japanese worker to an intolerable existence.[21] "Once [the Japanese laborer is] aroused, realization must follow. Then the strong opposition against the existing order . . . will show itself. Class conflict, bitter and fierce, will be waged. . . . It will be too late then to seek a rational solution of the labor problem." [22] And in a fashion somewhat reminiscent of Gompers who had stated that he would make an agreement with the devil if he could thereby advance the cause of labor, Takano tried to foster a protective and vested interest in the down-trodden workers among those who actively advocated the militaristic programs of the state. "The evil consequences of this child labor and long working hours," he soberly noted, "has been demonstrated by the fact that 94 out of 100 applicants in the city [of Osaka] for enlistment in the army were rejected on the ground of physical disabilities. . . ." [23]

Well formed and clear as were his ideas upon the industrial-labor situation in Japan, there is little evidence, however, to indicate that Takano attempted to agitate on behalf of the workers during the first year after his return from the United States. Why this was so, in view of his obviously strong beliefs, is difficult to explain. But it may be suggested that Takano hesitated to undertake alone the task of labor agitation and decided to await the return of other members of the *Shokkō Giyū-kai* from America. Not living in Tokyo or Osaka, the centers of modern industry, not having any intimate acquaintance with the "thinkers" of Japan, and perhaps lacking the financial resources necessary to underwrite a campaign in the labor field, Takano may have had no alternative but to bide his time. But when in the late months of 1896 Jō Tsunetarō and Sawada Hannosuke returned to Tokyo from the United States, it was not long before Takano was able to embark upon a new career.

The problem of the origins of the organized labor movement in Japan in the aftermath of

[16] For a critical contemporary analysis of the growth of Japanese industry and labor see Takagi, Masayoshi, Conditions of the Japanese laborers, *Far East* **3**: 290–297, 1898. See also Ōkōchi, Kazuo, Rōdō, in Yanaihara, *op. cit.* **2**: 122–124.

[17] Takano, Fusataro, Strikes in Japan, *Far East* **2**: 237, 1897. For statistical data on strikes in Japan after the Sino-Japanese War see Murayama, Shigetada, *Nihon rōdō sōgi-shi*, 224, Tokyo, Kasumigaseki Shobō, 1946, and Ōkōchi, *op. cit.* **2**: 147–148.

[18] Abe, Iso, Social problems and their solution, *Far East* **1**: 14–18, 1896. See also Katayama, Labour problems old and new, *loc. cit.*, 477–490.

[19] Takano, Labor problem in Japan, *loc. cit.*, 112.

[20] *Ibid.*, 108.

[21] *Ibid.*, 107.

[22] *Ibid.*, 108.

[23] *Ibid.*, 111.

the Sino-Japanese War has usually been handled in a decidedly unsatisfactory manner. Although there are many reasons for this deplorable situation, it will suffice to point out that undue reliance has been placed upon the writings of several individuals who were really not principals in the events they apparently describe from first-hand knowledge.[24] Thus, it has been customary in the literature on the subject to ascribe a primary role to Jō Tsunetarō and Sawada Hannosuke. Shortly after their return from the United States, the conventional accounts indicate, these two pioneer trade-union organizers came to the conclusion that conditions in Japan were "ripe" for the inauguration of an organized labor movement. Whether or not their judgment was correct is a moot but vital point. Believing as they did, however, Jō and Sawada proceeded to distribute a pamphlet, entitled *A Summons to the Workers*, to factory employees in Tokyo.[25] This action in April, 1897, has been hailed as a "red-letter day" in Japanese trade-union history.

This traditional account of the launching of the organized labor movement in Japan is doubtless correct and there is no reason to deny to Jō and Sawada the honor which is rightfully theirs. Still, reflection should reveal that some extremely important information is omitted from the standard version. What may especially be pointed out is that, while Jō and Sawada are said to have distributed *A Summons to the Workers* it has not been maintained that they were its authors. The document was most likely written by Takano Fusataro.[26]

In support of the proposition that *A Summons to the Workers* was the handiwork of Takano, several matters must be taken into account. It is, in the first place, most improbable that Jō and Sawada would have failed to get in touch with Takano after their return from the United States and that they would have attempted the writing and distribution of the pamphlet without consulting him. It is not too much to assume, moreover, that Jō and Sawada, a shoemaker and tailor, respectively, would not have undertaken by themselves the preparation of a labor brochure without seeking to enlist the assistance of an easily available former member of the *Shokkō Giyū-kai* who had since become a professional writer. But unquestionably more weighty than these speculations is a report by Takano, written in the spring of 1897, on the unfolding of the trade-union movement in Japan. As a sober and realistic account, it is worthy of the most serious attention.

According to Takano, the *Shokkō Giyū-kai*, which had first been established in San Francisco, was reconstituted following the return of several of the original members to Japan. On April 6, 1897, the group sponsored a public meeting at the Kinki-kan in Kanda, Tokyo, which was attended by "several hundred workmen." At this historical gathering devoted to the cause of labor addresses were delivered by Sakuma Teiichi, K. Tajuna [*sic*], T. Takeuchi, and Takano. As Takano stated, "I myself advanced the organization of workers as the best means to promote the interest of workers, dwelling at considerable length upon the method of the formation of the trade-unions, explaining the plan of American trade-unions and the American Federation of Labor." At the meeting, Takano continued, a pamphlet was distributed "in which the benefit of organized action, the plan of formation, and the beneficiary system in vogue in the United States were fully set forth." The lecture by Takano and the pamphlet, *What the Worker Should Know*, provided the first systematic explanation of the theory and practice of American trades-unionism to be presented in Japan.[27]

Takano himself was not greatly impressed by the results of the meeting. "It cannot be said that the meeting has done much toward the

[24] Especially regrettable is the excessive and uncritical reliance upon the later works of Katayama. There is a great need for carefully edited editions of Katayama, Sen and Kōjirō Nishikawa, *Nihon no rōdō undō*, referred to in footnote 7, and of Katayama, Sen, *The labor movement in Japan*, Chicago, Charles Kerr, 1918.

[25] The standard account is presented, *inter alia*, in Kishimoto, Eitarō, *Nihon rōdō undō-shi*, 19–20, Tokyo, Kōbun-dō, 1953, and in Ōkōchi, Kazuo, *Reimei-ki no Nihon rōdō undō*, 59, Tokyo, Iwanami Shoten, 1955.

[26] It is suggested that the account of Katayama and Nishikawa, *op. cit.*, 18, be compared carefully with that of Yokoyama, Gennosuke, *Nihon no kasō shakai*, 314–315, Tokyo, Iwanami Shoten, 1955. Yokoyama's work was originally published in 1898. According to Takano, only one other member of the original San Francisco group besides Jō, Sawada, and himself had returned to Japan by the spring of 1897.

[27] Takano, Our organizer in Japan, *loc. cit.*, 77. This meeting has unfortunately been overlooked in almost all histories of the Japanese labor movement. The complete text of the pamphlet is given in Katayama and Nishikawa, *op. cit.*, 18–27, and in Akamatsu, Katsumaro, Nihon rōdō undō hattatsu-shi, *loc. cit.*, 25–35. A partial translation by me will be found in de Bary, W. Theodore (ed.), *Sources of the Japanese tradition*, 807–811, New York, Columbia University Press, 1958.

labor movement in this country," he observed, "but it serves as a foundation for future work." [28] When, however, he considered the prospects for "future work," Takano was decidedly unhappy. Of immediate concern was the problem of securing funds, without which the program of public meetings would have to be abandoned. To obtain contributions from wage-starved workers was well nigh impossible. And in a letter to his idol, Samuel Gompers, he grieved over his inability to find a financial "angel." "I hope," he said in concluding his lament, "we will not be forced to abandon the idea of holding meetings." [29] Whether Gompers personally responded to the hint is difficult to ascertain; an examination of the detailed financial statement of the American Federation of Labor for 1896 reveals no contribution to the Japanese labor movement.

As Japan slipped into a business recession and as strikes continued to flare up, the "Friends of Labor" decided to press on with their campaign to organize the workers. This was perhaps an ill-timed decision, one which in the long run was to have unfortunate effects. In all industrial societies efforts to promote trades-unionism during times of depression have usually been unavailing. It was Japan's misfortune that the first really significant attempt to organize her workers occurred in a period when economic conditions were inopportune.

Despite the adverse conditions, Takano and his comrades pushed ahead with their work. To assist them in the task of "educating" the workers the cooperation of a small group of men was secured. Though these recruits were not very familiar with the problems of trades-unionism, they did hold in common some idealistic social and economic views. Katayama Sen, a western-educated settlement worker, was invited to join, probably on the grounds that he had studied "social problems" in the United States and England. At the time he was not, as he states in his *Autobiography*, particularly well informed on labor matters.[30] Shimada Saburō, an energetic liberal war-horse ever in the forefront of worthy causes, generously contributed his name and occasionally his presence to the group. Suzuki Junichirō, a professor of economics, lent his professional name and title, while Sakuma Teiichi, the progressive owner of one of Tokyo's largest printing houses, continued to furnish his enthusiasm, faith, and probably his money.[31] Such a motley group of idealists and reformers had probably not banded together in one organization since the establishment of the First International in 1864.

These men, though they were radicals within the context of Japanese conditions, were essentially moderate in their beliefs. Being basically social reformers, they did not consider the capitalist system to be inherently evil. Not of "proletarian" background themselves, they sincerely believed that laborers had a right to a decent livelihood and to hope in life. When they agreed to participate in a trade-union movement, they had no intention of stirring up discord but rather hoped to eliminate the abuses in existing working conditions which were fomenting strife in the industrial world. It is, thus, not surprising that for several years businessmen and government officials in general viewed their activities, if not with complete indifference, tolerantly.[32]

By the summer of 1897 it had become possible for the group to take more vigorous action in the labor field. On June 25 a public meeting, attended by some twelve hundred workers, was held in Kanda, Tokyo.[33] At the conclusion of the proceedings, Takano, as spokesman for the sponsoring organization, called for members to join in the establishment of an association to promote the formation of trade-unions. Only forty-seven responded. In view of the large number of workers attending the meeting, this small number might seem to have been rather discouraging, but it should be borne in mind that the size of the audience at public gatherings in Japan, especially during the Meiji period, was not always an accurate indication of intrinsic interest in the program or in the speakers. Among the poverty-stricken Japanese, as doubtless among other people, public meetings were

[28] Takano, Our organizer in Japan, *loc. cit.*, 77.

[29] *Ibid.*, 78.

[30] Katayama, Sen, *Katayama Sen jiden*, 190, Tokyo, Shinrisha, 1949.

[31] On Sakuma Teiichi, the "Robert Owen of Japan," see Takano, Fusataro, Prospects of the Japanese labor movement, *Amerfed.* **4**: 210–211, 1897.

[32] Takano, Fusataro, Experience of a labor agitator in Japan, *Amerfed.* **5**: 4, 1898.

[33] At the very time the meeting was called, the ship-carpenters of Yokohama were out on strike, in the course of which they organized themselves into a union. The success of the strikers greatly encouraged the organizers in Tokyo. See Takano, Fusataro, A remarkable strike in Japan, *Amerfed.* **4**: 144–145, 1897. At the meeting Takano delivered an address entitled "The workers in Japan and America." See Katayama and Nishikawa, *op. cit.*, 27.

considered a free or inexpensive form of entertainment, a welcome diversion from the dull routine of daily life. As a result, public speakers were usually accorded a wide hearing. Despite, or because of this, public gatherings in Japan were considered by the police to be much more dangerous than radical literature, the censorship of which was rather haphazard, for the listening audience was clearly far greater numerically than the reading public.

The *Rōdō Kumiai Kisei-kai* (Society for the Promotion of Trade-Unions), organized on July 7, while it revealed in its outlook the strong influence of the American Federation of Labor, was designed to cope with the specific realities of the Japanese labor situation. The purpose and function of this organization have commonly been misunderstood; it was not a trade-union *per se* but, as its name denotes, a society for the encouragement of trade-union organization. Takano himself called it a "trades union school." [34] As such, it undertook to provide education in labor problems for workers, who were then expected to enlighten their fellow workers to the end that a trade-union might be organized. The society also strove to coordinate the activities of trade-unions and devoted itself to the promotion of the common interests of labor.

The emphasis on education of the *Rōdō Kumiai Kisei-kai* revealed the belief of Takano that a primary problem in organizing the workers was to emancipate them from the bondage of their own ignorance. It indicated also a realistic appreciation of the limitations of the would-be organizers themselves. Aside from Takano and a few others, none of the members of the Society had more than a superficial knowledge of labor problems; it is extremely doubtful that much could have been achieved by directly approaching the workers. Since, moreover, most of the leaders had their own professions and their own livings to earn, they were both unwilling and unable to become "career" labor leaders devoting their entire time to the task of organizing unions. In view of this state of affairs, though Takano was appointed to head the *Rōdō Kumiai Kisei-kai*, the actual organizational work was shifted to the shoulders of those workers trained by the Society.[35]

Like the aristocrats of American labor, the *Rōdō Kumiai Kisei-kai* was concerned primarily with the organization of skilled workers bound together along federative lines. Unlike the American Federation of Labor, however, the Japanese promoters of labor organization did not have at hand a nucleus of powerful national trade-unions. It is of interest too that at this time, when the A. F. of L. was still in its infancy, its membership exceeded the total number of "industrial" workers in Japan, who comprised only a small part of the nation's labor force.[36] While the decision to concentrate upon the organization of skilled workers precluded the development of a numerically stronger trade-union movement, it was, considering the undeveloped state of Japanese industry, the only feasible policy. If the failure of the Knights of Labor and its policy of centralization and industrial unionism, as opposed to federation and crafts unionism, had taught Takano the difficulty of promoting a mass labor movement in the United States, his reservations about the wisdom of this policy were heightened by an analysis of the Japanese situation.

The Japanese people, as Takano well realized, were, to an unusual degree, socially class conscious but not at all in the Marxian sense of the term. Following the Revolution of 1868, class distinctions had generally been abolished by law but the traditional lines of cleavage in Japanese society persisted. With the growth of industrialization the hierarchical arrangement of the Japanese social structure was understandably subjected to tremendous strain. In so far as the problems of labor organization were concerned, the task was not only to observe metic-

[34] Takano, Prospects of the Japanese labor movement, *loc. cit.*, 210. See also Ōkōchi, *op. cit.* **2**: 148–149.

[35] A notable exception was Katayama Sen, of whom a biographer has well said, "In the Japan of 1896 to be a friend of the workers was a career, but not a livelihood. So from now on there is a dualism in Katayama's life. He is earning a variably precarious living. . . . On the other hand, he is lecturing on social reform up and down the country. . . . There is Iwasaki [a friend] in the background for ever trying to make him self-supporting, while he himself . . . insists on being self-sacrificing." Redman, H. Vere, Sen Katayama, *Contemporary Japan* **2**: 673, 1934.

Redman is in error when he implies that Katayama's interest in the workers began as early as 1896. Katayama was at this time simply drifting about, hoping to secure a position in the missionary movement. His interest in labor problems was not aroused until the following year. It should be observed also that, when the *Rōdō Kumiai Kisei-kai* was organized, Takano gave up his job, moved to Tokyo, and became the general director of the organization.

[36] In 1897 there were employed in the factories of Japan 182,792 male workers and 254,462 women. The total, 437,254, represented about one per cent of the population. *Japan year book, 1907*, *op. cit.*, **14**: 383.

ulously the social sensitivities and vested economic interests of skilled workers engaged in the traditional crafts and trades but also to secure social recognition and status for the worker in the new, modern industries. Artisans and mechanics, jealous of their social position, could not easily be persuaded to cross class lines, much less to enter the social no man's land of the modern industrial worker. Industrial unionism, obscuring the social parochialism of the crafts and trades, would at the time have been policies of folly.[37] The *Rōdō Kumiai Kisei-kai* adopted, accordingly, a program of encouraging the formation of autonomous, federated trade-unions.

Only the previous spring Takano had written that he would not "be surprised at all to find myself alone on the field advocating the trade unionism during a few years to come." [38] The successful launching of the *Rōdō Kumiai Kisei-kai* as well as the rapid enlistment of workers into the Society, however, encouraged him immensely. As his work with the Society brought him into contact with the workers and their burgeoning leaders, he was able to provide them with advice and to offer them hope. The "follies and mistakes that were made by western workers stand ample warning for us," he pointed out, "and if we but heed them the path of labor emancipation in this country will present quite a different picture than that of western countries." [39] But if Takano appreciated these "follies and mistakes," he was rapidly to become aware that other labor leaders did not.

During 1898 the pattern of the Japanese trade-union movement started to take on form. As might have been expected little, if any, headway was made in the organization of workers in the textile industries, whose women and child laborers constituted at least half of the industrial labor force of the country. More successful, however, was the progress in the unionization of some of the highly skilled trades. Following the formation of the Iron Workers' Union (*Tekkō Kumiai*) in December, 1897,[40] the labor movement scored a brilliant victory with the organization of the engineers of the Japan Railway Company, the nation's largest, in March, 1898.[41] Some months later the printers of Tokyo were, after more than fifteen years of abortive effort, also organized.[42] Other unions were brought into being by invasion of the traditional guilds, such as the ship-carpenters, plasterers, furniture-makers, and doll-makers.[43] It has been estimated that during this period about 20,000 workers were brought into the union fold.

Though on the surface the trade-union movement appeared by 1899 to be gathering momentum and strength, symptoms of inner stress and outer conflict were becoming increasingly evident. To some extent this was due to the very initial successes of the trade-union organizers, for with each new union established the number of potential new members was considerably reduced. Basic to the entire problem was the consideration that Japanese industry was still undeveloped and, most importantly, undiversified. It should not be forgotten, moreover, that the number of Japanese industrial workers did not grow but actually declined during this period. There is also some evidence that workers were losing their interest in the movement, for there was little to indicate that the grandiose hopes of the leaders were being realized. Strikes, which had become ever more numerous in the first years after the Sino-Japanese War, fell off

[37] That Takano subordinated his own views and emotions to the practical demands of organization is well attested by his following observation. "In this country," he said, "a man as a worker is a socially doomed being, whether he be a skilled mechanic or a waste paper picker. When we look at the life condition of the workers the demarcation line of their trades is completely blotted out; for they lead, one and all, a life of hopelessness." Takano, Fusataro, Typical Japanese workers, *Far East* **2**: 169, 1897.

[38] Takano, Our organizer in Japan, *loc. cit.*, 78

[39] Takano, Prospects of the Japanese labor movement, *loc. cit.*, 210

[40] Takano, Fusataro, A new trade union in Japan, *Amerfed.* **4**: 272, 1898.

[41] See the excellent account by Humphreys, M. G., Trade unions in Japan, *Century Magazine* **61**: 896–897, 1901. In the case of the Iron Workers' Union it is of interest that the constitution and by-laws "were copied from those of the American trade-unions." Katayama, Sen, *The labor movement in Japan, op. cit.*, 38. One of the principal objectives of the members was the elevation of their "social standing." The railway engineers' union was called the *Kyōsei-kai* (Treatment Improvement Association). In their great strike in 1898 the men demanded "better treatment," "better wages," and "better social position." When the Japan Railway Company finally came to terms with its workers, the strikers received not only an increase in wages but were also placed on the level of clerks and station-masters. See also Takano, Fusataro, Great railway strike in Japan, *Amerfed.* **5**: 48–50, 1898.

[42] Tragically, Sakuma Teiichi, who had labored for years to organize the printers, died a few weeks before success was finally achieved.

[43] Katayama, Sen, *The labor movement in Japan, op. cit.*, 44.

sharply in 1899.[44] Because of the fear of domination by outside organizations and the desire for independence in the determination of policy, unions had carried decentralization to excess. Conceptions of labor solidarity did not extend much beyond the individual trade-union and the coordinating activities of the *Rōdō Kumiai Kisei-kai* were becoming little more than nominal.[45]

The difficulty of arousing the Japanese worker, of breaking down the customs and outlook buttressed by centuries of tradition was a chronic exasperation. Takano himself, ordinarily a patient person, was at times led to castigate the workers for their timidity and ignorance. Rather than deceive himself and those he sought to help, he looked reality in the eye. The "treatment accorded us by working people for whose interests we are sacrificing our life's comforts and pleasures is," Takano bluntly stated, "a bitter story."

> Accustomed as they were to a servile life for a long period, material and mental advancement offered by the labor movement proves to them to be an unattractive program. To contribute one cent toward the maintenance of the movement is, they take it, a mere waste. To them, demanding of their employers their rightful share of production is something unholy to attempt. Evils of child labor and long working hours are uncomprehensible [*sic*] to them. . . . There are long, long years to come that we must spend in converting these people. . . .[46]

In the face of such difficulties, Takano concluded, "our hearts lose considerable enthusiasm."

Such outbursts by Takano were, of course, evoked by despondency and annoyance at the rise of new obstacles in the path of the trade-union movement. Despite his unmerciful language, Takano was by no means contemptuous of the wretched worker, for few better than he understood the immensity and complexity of their problems.[47] Although he may have railed at their reluctance to contribute "one cent" to the union cause, he knew that, with his pathetically low wages, the donation of even the smallest sum meant dire hardship for many a worker.[48] Takano was well aware also that to the suspicious laborer there was little difference between the financial obligations imposed by the newfangled unions and the extortionate demands of the traditional "introducer."[49] And who more than Takano realized that the distrust of the union benefit system was but the natural reaction of grim laborers who had occasionally been mulcted by the unscrupulous promoters of bogus mutual savings associations and cooperative ventures?[50] Takano despised not the workingmen but rather the ignorance which held them in thrall.

As serious as were the problems raised by indifferent and suspicious workers were those posed by gradually enlightened labor leaders and mentors. "The first effort toward the amelioration of the working class," Takano had written in 1894, "must be directed to arouse the thinkers of the country for the necessity of their action." By 1899 it was fairly evident from the rapidly growing volume of literature on labor problems that considerable progress had been made in awakening the "thinkers." By prodding social consciences, however, individual intellects had also been stimulated. In their quest for enlightenment the "thinkers" had understandably turned to the literature and experience of western societies, where labor philosophies and programs differed radically.[51] As a consequence, the realization of Takano's second step, the establishment of an "organization to discuss a practical plan to be pursued in the work of educating the working people" was immeasurably complicated. At a time when the labor movement could least afford strife, leaders as well as rank and file were dissolving into bickering factions.

Takano, who had been so strongly influenced by the American Federation of Labor, was

[44] Whereas in the last half of 1897 there had been 32 strikes and, in 1898, 43, in 1899 there were 15. In 1900 the number dropped to 11. The number of participants rose from 3,517 in the last half of 1897 to 6,293 in 1898 but dropped to 4,284 in 1899. In 1900 only 2,316 workers engaged in strikes. Murayama, *op. cit.*, 224.

[45] Takano returned to Yokohama in November, 1898, and there established a cooperative store for workers. He did not resume his duties as Secretary of the *Rōdō Kumiai Kisei-kai* in Tokyo until the summer of 1899. See Takano, Fusataro, Rōdō Kumiai Kisei-kwai, *Amerfed.* **6**: 188–189, 1899.

[46] Takano, Experience of a labor agitator in Japan, *loc. cit.*, 4–5.

[47] Takano, Typical Japanese workers, *loc. cit.*, 168–173; and by the same writer, Female labor in Japan, *Amerfed.* **4**: 231–232, 1897.

[48] Takano, Fusataro, The Japanese workers' condition, *Amerfed.* **2**: 119–120, 1895.

[49] For a description of the function and activities of this labor racketeer, see especially Ōkōchi, *op. cit.* **2**: 134–135; and Hayakawa, T., The necessity of enacting a law for labourers, *Far East* **2**: 660–661, 1897. Hayakawa was the private secretary of the Minister of Agriculture and Commerce.

[50] Takano, Experience of a labor agitator in Japan, *loc. cit.*, 5.

[51] By this time Katayama had presumably learned that "Carl Mark" was not a simple "trade-unionist." See Katayama, Labor problem old and new, *loc. cit.*, 481.

extremely wary of labor's involvement in politics. He understood, quite correctly, that political pressure could be used effectively to establish a legal basis for trade-union activity and to secure the abolition of local statutes prohibiting labor organization and agitation.[52] He was, moreover, not averse to lobbying for an extension of the suffrage and for the passage of sorely needed factory legislation.[53] But he also appreciated the wisdom of moderate and temperate action so as to avoid antagonizing the state. Thus, when the Iron Workers' Union was founded, Takano was led to congratulate the organizers on their restraint. "The founders of the union," he said, "should be complimented for their wise choice of peaceful and conservative methods as represented in pure and simple trade unionism." [54] Their intention "to keep away from any action which has a partisan political coloring" he thought was judicious. It would, according to Takano, have been the "height of folly on the part of organized workers to indulge in inflammatory or radical utterances [when they] . . . are not sufficiently organized . . . and the strong arm of government is ever ready to crush our organization. . . ." [55]

Takano was clearly almost exclusively concerned with immediate improvements in the conditions of the workers. To him the victory of the moment was far more important than the hope of the morrow. This view of the limited role of labor, the devotion to trades-unionism pure and simple, was not, however, shared by all the "thinkers." Some, like Professor Kanai Noboru, who sought to preserve the framework of the capitalist system, looked upon the labor movement as a means of fostering broad social reform.[56] Others, like Katayama Sen who was succumbing to the influence of European socialists, were beginning to consider the trade-union as an instrument for the hastening of the millennium. As Editor of the *Rōdō Sekai* (Labor World), the only important labor newspaper in Japan, and, as Secretary of the Iron Workers' Union, the nation's strongest trade-union, Katayama was excellently situated to exercise a powerful influence on the labor movement and to strive for its diversion along a socialist course.

The limitations of Takano's views soon became evident. At the same time it should be noted that the programs of his rivals fared no better. Despite his best efforts, if not those of other more impulsive labor leaders, the police action which Takano had feared was quickly forthcoming. Determined to promote industrialization as rapidly as possible, the Japanese government would brook no obstacles. As strikes, no matter how few and innocuous, continued to be held, and as a mantle of "radicalism" started to settle over the labor movement, the suspicious eye of the state was caught.[57] Following preliminary and uncertain harassment, the fatal blow was delivered in February, 1900, when the government signed the death warrant of the potentially dangerous labor movement by passing the notorious Public Peace Preservation Law.[58] As the *Rōdō Sekai* protested indignantly,

> The law provides clauses that will enable the police authorities to stop, to punish, and to fine workingmen who speak or agitate for wages and hours of labour. . . . Workingmen hereafter will be completely under the mercy of the employers; they cannot ask for higher wages or shorter hours without violating the law. There will be left no room for workingmen to organize themselves into a union, because the law forbids, with a threat of severe punishment of fine or hard labour, labour agitation of any form whatever.[59]

It is understandable that the period during which this law remained in effect is designated in Japanese trade-union history as "Ankoku Jidai," the "Dark Ages."

The passage of the Public Peace Preservation Law of 1900 is possible of varying interpretation.

[52] Takano, Strikes in Japan, *loc. cit.*, 238; and Takano, Our organizer in Japan, *loc. cit.*, 78.

[53] Takano, Fusataro, Proposed factory act in Japan, *Amerfed.* **4**: 250–252, 1898; and by the same writer, Factory legislation in Japan, *Amerfed.* **5**: 200–201, 1898.

[54] Takano, A new trade union in Japan, *loc. cit.*, 272.

[55] *Ibid.*, 272.

[56] In November, 1898, at the time Takano went back to Yokohama, Katayama had joined with several other "intellectuals" in founding the *Shakai Shugi Kenkyū-kai* (Society for the Study of Socialism). See Kublin, Hyman, The Japanese socialists and the Russo-Japanese war, *Jour. Mod. Hist.* **22**: 325, 1950.

[57] Takano, Fusataro, Labor notes from Japan, *Amerfed.* **5**: 118, 1898. See also his Experience of a labor agitator in Japan, *loc. cit.*, 4.

[58] Of considerable interest is Takano's observation that repressive activities by the state were partly designed to prevent clashes between Japanese workers and the owners of foreign factories, especially in Yokohama. In the closing years of the century, when the system of extra-territoriality was in process of modification, the government was doubtless anxious to avoid any embarrassment with the western powers. See Takano, Labor notes from Japan, *loc. cit.*, 118–119.

[59] As quoted in Stead, Alfred, *Great Japan*, 230, New York, John Lane, 1906.

To some historians the act has been deemed a reflection of the rising forces of capitalism in Japan. Although there is doubtless some validity in this claim, it rests upon an inordinately simplistic and mechanistic conception of capitalism. Japan in the late nineteenth century as well as for many years thereafter was a capitalist nation in little more than name. The Public Peace Preservation Law was, it would seem likely, more a manifestation of the weakness of Japanese capitalism, more a succinct commentary upon the arbitrary nature of the Japanese state which succeeded in warping not only the labor movement but capitalism as well. Given the circumstances of Japanese history, thus, it is doubtful that any trade-union movement could have been successful in the years immediately after the Sino-Japanese War.

The blow against the labor movement by the state had a crushing effect on Takano. Though he was a fighter, he saw no sense in becoming a martyr. Deeming further struggle to be futile, he retired from the labor field completely. Shortly thereafter, Takano departed for north China, where he roamed about for the next few years as a correspondent for the *Japan Advertiser*. On March 12, 1904, he succumbed to an abscess of the liver in the German hospital at Tsingtao at the age of thirty-six.

Among the many social reformers of the late Meiji period few have fared as unkindly at the hands of posterity as Takano Fusataro. Buried deep in the unthumbed index of history, he has been graced with neither obituary nor epitaph. Never having confused his life with the history of his times, never having prepared literary monuments in his own honor, he has unfortunately been forgotten by the generations that have followed him. The modest and level-headed Takano may perhaps not be entitled to honors; that he does not deserve obscurity is equally clear.

THE FULL-MOON AND NEW-MOON SACRIFICES IN THE TAITTIRĪYA-BRĀHMAṆA (SECOND PART)

The Third Prapāṭhaka of the Third Kāṇḍa of the Taittirīya-Brāhmaṇa with Translation

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3.3.7 The Adhvaryu invites the Hotar to recite the *sāmidhenī* stanzas; he puts fifteen kindling-sticks on the Āhavanīya fire; he puts the three enclosing-sticks around the fire; he puts upright two sticks for the two *āghāras;* he leaves remaining one kindling-stick for the after-offerings; he fans the Āhavanīya fire; he makes the first *āghāra*. The Āgnīdhra sweeps the enclosing-sticks. The Adhvaryu lays his joined hands on the *vedi;* he takes the *juhū* in his right hand, and the *upabhṛt* in his left hand; he addresses Agni and Viṣṇu; he takes his place at the southwestern corner of the Āhavanīya fire; he makes the second *āghāra;* he lifts up the *juhū;* he walks back northwards, avoiding bringing the two spoons into contact; he addresses a prayer to Agni; he pours out the rest of the melted butter from the *juhū* into the *dhruvā* 595

3.3.8 The Adhvaryu walks about in order to give a portion of the *iḍā* to the four priests and the Sacrificer, and he avoids going between them; he puts the *avāntareḍā* in the hand of the Hotar; the Hotar calls the *iḍā;* the Adhvaryu recites a formula; he places separately the share of the Sacrificer; he puts the sacrificial cake on the sacrificial grass; he divides the sacrificial cake into four parts; the Sacrificer touches the four parts of the sacrificial cake, assigning one to each of the four priests; the Adhvaryu gives to the Āgnīdhra his share first; he puts the share of the Brahmân on the *veda*, and carries it to him; he gives to the Hotar his share, and finally to himself his share; he orders the Āgnīdhra to sweep the enclosing-sticks. After the *anuyājas*, he addresses the Hotar, and the Hotar recites the *sūktavāka*. The Adhvaryu orders the Hotar to recite the *śaṃyuvākā* 598

3.3.9 The Adhvaryu separates the *juhū* and the *upabhṛt;* by means of the *juhū* he anoints the three enclosing-sticks; he anoints the *prastara;* he throws the *prastara* into the Āhavanīya fire; he touches the earth. While the Hotar recites the *śaṃyuvākā*, the Adhvaryu throws the enclosing-sticks into the Āhavanīya fire; he pours into the *juhū* the remainder of the oblation left in the *upabhṛt;* he pours the remainders of the oblation into the fire, on the enclosing-sticks, and addresses the Viśve Devāḥ; he puts the *juhū* and the *upabhṛt* on the yoke of the cart; he offers, in the Dakṣināgni, the chaff produced

by the husking of the rice. The Hotar throws the *veda* in the lap of the Sacrificer's wife; strewing the grass-stems that compose the *veda*, the Hotar walks from the Gārhapatya to the Āhavanīya. The Adhvaryu offers to Vāta the oblation called *samiṣṭayajus* 601

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PREFATORY NOTE

THE Taittirīya-Brāhmaṇa deals with the full-moon and new-moon sacrifices in four Prapāṭhakas of the Third Kāṇḍa, namely 3.2, 3.3, 3.5, and 3.7. In April, 1957, I published the translation of the first of these four Prapāṭhakas in Vol. 101 of the *Proceedings* of the American Philosophical Society, and now I am publishing the second one (3.3). This Prapāṭhaka begins with the explanations referring to the rites that follow the preparation of the *vedi*, and ends with those referring to the last rites of the ceremony. The translation sometimes was a difficult task because of the conciseness of the text, which, in a few instances, is quite unintelligible without the help of Sāyaṇa's commentary and Āpastamba's Śrautasūtra.

Just as it was done for my other translations of the Taittirīya-Brāhmaṇa, my translation of this Prapāṭhaka is accompanied by an accented transliteration of the text. It is the text of the Ānandāśrama Series, and the numbers enclosed in brackets in the transliterated text, [1], [2], [3], etc., correspond to the numbers which are inserted in the text of the Indian edition; they indicate the subdivisions of each chapter (*anuvāka*). But, as these subdivisions are quite arbitrary, I added the letters (*a*), (*b*), (*c*), etc. in order to indicate more rational subdivisions. Only in a few cases have I corrected an evident misprint or ventured a conjecture.

The reader will find a summary of the rites of the full-moon and new-moon sacrifices, according to Āpastamba, in the introduction to my translation of Tait.-Br. 3.2 (*Proc. Amer. Philos. Soc.* **101**: 217, 1957).

ABBREVIATIONS

Āp. = Āpastamba-Śrautasūtra.
RV. = Ṛgveda-Saṃhitā
Tait.-Br. = Taittirīya-Brāhmaṇa.
TS. = Taittirīya-Saṃhitā.
Śat.-Br. = Śatapatha-Brāhmaṇa.
JAOS = Journal of the American Oriental Society.

3.3.1

(*a*) prátyuṣṭaṁ rákṣaḥ prátyuṣṭā árātaya íty āha, rákṣasām ápahatyai; agnér vas téjiṣṭhena téjasā níṣṭapāmí 'ty āha medhyatvāya; srúcaḥ sáṃmārṣṭi, sruvám ágre, púmāṁsam evá "bhyaḥ sáṁśyati mithunatvāya, átha juhūm, átho 'pabhṛtam, átha dhruvám, asáu vái juhūḥ [1], antárikṣam upabhṛt, pṛthiví dhruvā, imé vái lokáḥ srúcaḥ, vṛṣṭiḥ saṃmārjanāni, vṛṣṭir vā imā̃l lokā̃n anupūrvám kalpayati, té tátaḥ kḷptā́ḥ sámedhante, sámedhante 'smā imé lokáḥ prajáyā paśúbhiḥ, yá evám véda.

(*b*) yádi kāmáyeta várṣukaḥ parjányaḥ syād íti, agratáḥ sáṃmṛjyāt [2], vṛṣṭim evá níyacchati, arvācínāgrā hí vṛṣṭiḥ; yádi kāmáyetā 'varṣukaḥ syād íti, mūlatáḥ sáṃmṛjyāt, vṛṣṭim evó 'dyacchati, tád u vā āhuḥ, agratá evó 'páriṣṭāt sáṃmṛjyāt, mūlató 'dhástāt, tád anupūrvám kalpate, várṣuko bhavatí 'ti [3].

(*c*) prā́cīm abhyākā́ram, ágrair antaratā́ḥ, evám iva hy ánnam adyáte, átho ágrād vā óṣadhīnām ū́rjaṃ prajā́ úpajīvanti, ūrjá evā́ 'nnādyasyā́ 'varuddhyai, adhástāt pratīcīm, daṇḍám uttamatáḥ, mū́lena mū́laṃ prátiṣṭhityai, tásmād aratnáu prā́ñcy upáriṣṭāl lómāni, pratyáñcy adhástāt [4], srúg ghy èṣā́.

(*d*) prāṇó vái sruváḥ, juhū́r dákṣiṇo hástaḥ, upabhṛ́t savyáḥ, ātmā́ dhruvā́, ánnaṁ saṃmā́rjanāni, mukható vái prāṇò 'pānó bhūtvā́, ātmā́nam ánnam pravíśya, bāhyatás tanúvaṁ śubhayati, tásmāt sruvám evā́ 'gre sáṃmārṣṭi; mukható hí prāṇò 'pānó bhūtvā́, ātmā́nam ánnam āviśáti; táu prāṇāpānáu; ávyardhukaḥ prāṇāpānā́bhyāṃ bhavati, yá evā́ṃ véda [5].

[This chapter and the following one contain ritual and theological explanations referring to the cleaning, i.e. the heating and brushing, of the sacrificial spoons. The Āgnīdhra heats the spoons either on the Āhavanīya or the Gārhapatya fire, and brushes them.]

(*a*) (When the Āgnīdhra heats the spoons) he says: "The Rakṣas is burnt up, the evil spirits

are burnt up."[1] (Thus he says) in order to drive the Rakṣases back. He says: "With Agni's keenest flame I heat you thoroughly."[2] (Thus he says) for ritual purity (i.e. in order to make the spoons pure for the sacrifice). He brushes the spoons. First the *sruva* (the dipping-spoon). (By doing so) he makes a male (i.e. the *sruva*, which, being masculine, is considered as a male) ready for them (i.e. for the other spoons, which are considered as females), for copulation. Then (he brushes) (the offering-spoon called) the *juhū;* then (the offering-spoon called) the *upabhṛt;* then (the largest offering-spoon called) the *dhruvā*. The *juhū*, indeed, is yonder (heavenly world); the *upabhṛt* is the atmosphere; the *dhruvā* is the earth. Verily the sacrificial spoons are these (three) worlds, (and) the grass-stems used for the cleaning (of the spoons) are rain. Verily, (when the Āgnīdhra brushes the spoons with the grass-stems of the bunch of grass called *veda*,) it is rain indeed that makes these (three) worlds fit, in regular succession; and having been made fit, they then thrive. These worlds will thrive with offspring and cattle for him who thus knows.

(*b*) If he should wish: "May Parjanya (the god of rain) be raining," he should brush (the spoons) with the (grass-) tops (the grass-tops being turned downwards). (By doing so) he brings down rain, for rain has its points turned downwards. If he should wish: "May he (Parjanya) not be raining," he should brush (the spoons) with the lower (grass-) ends (the grass-tops being turned upwards). (By doing so) he holds up rain. And on this point they say: "On the upper part (of the spoons) (i.e. inside), he should brush with the (grass-) tops; on the lower part (of the spoons) (i.e. outside), with the lower (grass-) ends (so that the grass-tops, just as when he brushes the upper part, are turned downwards). That (i.e. that double rite), (performed) in regular order, is fit (for producing rain), and he (Parjanya) will rain."

(*c*) In a forward (eastward) direction (towards the spoon's tip), (the Āgnīdhra) repeatedly (brushes the spoon) inside (i.e. on the upper part of the spoon) with the (grass-) tops (of the *veda*); for it is thus, as it were, that food is eaten.[3] And it is (by taking it) from the top that creatures live upon the invigorating sap of plants. (This is done) in order to obtain invigorating sap, (i.e.) food (for the Sacrificer). On the lower part (of the spoon), (he brushes the spoon) in the opposite (i.e. westward) direction. The handle (he brushes) (on the upper part) with the upper part (of the grass-stems). (But) the base (i.e. the lower part of it) (he brushes) with the base (i.e. the lower part) (of the grass-stems), in order to obtain a firm stand (for the Sacrificer). It is because of that (i.e. because he brushes the upper part of the spoon and the handle in a forward direction, and the lower part of them in the opposite direction,) that, on the forearm, the hairs above are pointing forward, and those below are pointing backward. For such is the sacrificial spoon.[4]

(*d*) Verily the *sruva* is the *prāṇa* (outbreathing); the *juhū* is the right hand; the *upabhṛt* is the left (hand); the *dhruvā* is the trunk of the body; the implements used for the brushing of the spoons are the food. Verily, from the mouth, the *prāṇa* (outbreathing), having become the *apāna* (inbreathing), and having (then) entered the trunk of the body and the food (inside the body), beautifies the body externally. Therefore, he (the Āgnīdhra) brushes the *sruva* first, for, from the mouth, the *prāṇa*, having become the *apāna*, enters the trunk of the body and the food (inside the body). Such are the *prāṇa* and the *apāna*. He is not deprived of the *prāṇa* and the *apāna* (i.e. of life), he who thus knows.[5]

3.3.2

(*a*) diváḥ śílpam ávatatam, pṛthivyáḥ kakúbhi śritám, téna vayáṁ sahásravalśena, sapátnaṃ

[1] TS. 1.1.10.a.

[2] TS. 1.1.10.b.

[3] According to Sāyaṇa's commentary, it is said that "it is thus, as it were, that food is eaten," because when a man is eating, he stretches his hand forward to the plate, and then draws the food from all sides towards himself, and puts it into his mouth. The interpretation of this passage of the Tait.-Br. is difficult because of the conciseness of the text. Here is the commentary of Sāyaṇa: *bilabhāge paścimopakramāṃ prāgavasanāṃ sakṛt saṃmārjanakriyāṃ kṛtvā bilabilasyā 'bhyantare saṃtata ākṛṣyākṛṣya saṃmṛjyāt. yathā pumān hastaṃ purataḥ pātre prasāryā 'bhito bhojyāny ākṛṣya mukhabile prakṣipati tadvat.*—The meaning of the rare word *abhyākāram* "repeatedly" seems to be well established. *Cf.* Rudradatta's commentary on Āp. 2.4.4. *abhyākāram ity abhīkṣṇye ṇamul, abhyākāraṃ saṃmārṣṭi punaḥ punaḥ saṃmārṣṭī 'ty arthaḥ.*

[4] The interpretation of this passage is difficult because of the conciseness of the text and because the meaning of the hapax legomenon *uttamataḥ* is doubtful. Sāyaṇa explains it by *uttamena darbhabhāgena*, and I think he is right, although other parts of his explanation of the passage do not seem satisfactory. On the other hand, since the cleaning of every spoon probably ends with the cleaning of the handle (*cf.* Āp. 2.4.4–6), *uttamataḥ* possibly should be translated by "finally."

[5] See my note on the meaning of *prāṇa* and *apāna* in the Tait.-Br., in *JAOS* **77**: 46. See also *JAOS* **78**: 51–57.

nāśayāmasi svāhé 'ti, sruksaṃmārjanāny agnáu práharati, ápo vái darbhāḥ, rūpám evái 'ṣām etán mahimānaṃ vyācaṣṭe, anuṣṭúbha rcā, ánuṣṭubhaḥ prajāpatiḥ, prājāpatyó vedáḥ, vedásyā 'graṁ sruksaṃmārjanāni [1], svénai 'vái 'nāni chándasā, sváyā devátayā sámardhayati; átho ṛg vāvá yóṣā, darbhó vṛṣā, tán mithunám, mithunám evā 'sya tád yajñé karoti prajānanāya, prájāyate prajáyā paśúbhir yájamānaḥ.

(*b*) tāny éke vṛthai 'vā 'pāsyanti, tát táthā ná kāryàm, árabdhasya yajñíyasya kármaṇaḥ sá vidoháḥ [2], yády enāni paśávo 'bhitíṣṭheyuḥ, ná tát paśúbhyaḥ kám, adbhír mārjayitvó 'tkaré nyàsyet, yád vái yajñíyasya kármaṇo 'nyátrā "hutībhyaḥ saṃtíṣṭhate, utkaró vāvá tásya pratiṣṭhā, etáṁ hí tásmai pratiṣṭhāṃ devāḥ samábharan; yád adbhír mārjáyati, téna śāntám, yád utkaré nyasyáti, pratiṣṭhām evái 'nāni tád gamayati [3], prátitiṣṭhati prajáyā paśúbhir yájamānaḥ.

(*c*) átho stambásya vā etád rūpám, yát sruksaṃmārjanāni, stambaśó vā óṣadhayaḥ, tāsāṃ jaratkakṣé paśávo ná ramante, ápriyo hy èṣāṃ jaratkakṣáḥ, yāvadapriyo ha vái jaratkakṣáḥ paśūnām, tāvadapriyaḥ paśūnāṃ bhavati, yásyai 'tāny anyátrā 'gnér dádhāti, navadāvyāsu vā óṣadhīṣu paśávo ramante [4], navadāvó hy èṣāṃ priyáḥ, yāvatpriyo ha vái navadāváḥ paśūnām, tāvatpriyaḥ paśūnāṃ bhavati, yásyai 'tāny agnáu praháranti, tásmād etāny agnāv evá práharet, yatarásmint saṃmṛjyāt, paśūnāṃ dhṛtyai.

(*d*) yó bhūtānām ádhipatiḥ, rudrás tanticaró vṛṣā, paśūn asmākaṃ mā hiṁsīḥ, etád astu hutáṃ táva svāhé 'ty agnisaṃmārjanāny agnáu práharati, eṣā vā eteṣāṃ yóniḥ, eṣā pratiṣṭhā, svām evái 'nāni yónim, svāṃ pratiṣṭhāṃ gamayati, prátitiṣṭhati prajáyā paśúbhir yájamānaḥ [5].

[Having sprinkled with water the grass-stems that have been used for the cleaning of the sacrificial spoons, the Āgnīdhra throws them either into the fire on which the spoons have been heated or on the *utkara* (i.e. the heap of rubbish which is situated on the north side of the sacrificial ground).]

(*a*) "From heaven the decoration has been stretched down; on the summit of the earth it is lying; with this thousand-sprouted one we destroy the rival. Svāhā!" (With this stanza) he (the Āgnīdhra) throws the grass-stems that have been used for the cleaning of the sacrificial spoons, into the fire. Verily Darbha grass-stems are water. (By reciting that stanza) he explains their beauty, their glory. (He does it) with an Anuṣṭubh stanza. Prajāpati is related with the Anuṣṭubh metre; (the bunch of grass called) the *veda* belongs to Prajāpati; (and) the grass-stems used for the cleaning of the sacrificial spoons are the top of the *veda*. (Consequently, by reciting that stanza,) he (the Āgnīdhra) furnishes them (i.e. the grass-stems) with their own metre and with their own deity. And certainly the ṛc (the stanza) is a female, and the Darbha grass is a male. That is copulation. It is copulation, indeed, that he (the Āgnīdhra) effects for him (i.e. for the Sacrificer), in the sacrifice, for the sake of procreation. (And consequently) the Sacrificer propagates himself with offspring and cattle.

(*b*) Some throw those (grass-stems) away, at random. That should not be done. That (would be) a wrong milking of the sacrificial performance that has been undertaken (i.e. that would be drawing and using wrongly the power of the sacrificial performance). If cattle should tread upon those (grass-stems), that would not be good for the cattle. One should throw (those grass-stems) on the *utkara*, after having purified them with water. With the exception of the oblations, the firm resting place of whatever belongs to a sacrificial performance, is indeed the *utkara;* for that is what the gods have prepared for it as its firm resting place. By the fact that he (the Āgnīdhra) purifies (the grass-stems) with water, there is appeasement (i.e. the dangerous power which is in the grass-stems is appeased, and evil is averted). By the fact that he throws them on the *utkara*, he brings them to their firm resting place. (Consequently) the Sacrificer is firmly established (i.e. prospers) with offspring and cattle.

(*c*) But the grass-stems used for the cleaning of the sacrificial spoons are the image of a tuft (they have the appearance of a tuft); for herbs are (growing) by tufts.—Cattle do not delight in their old brambles, for old brambles are disagreeable to them. Verily, just as old brambles are disagreeable to cattle, so is he (the Sacrificer) disagreeable to cattle for whom he (the Āgnīdhra) puts those (grass-stems) anywhere else than into the fire.—Cattle delight in herbs growing on a recently burnt pasture land; (for) a recently burnt pasture land is agreeable to them. Verily, just as a recently burnt pasture land is agreeable to cattle, so is he agreeable to cattle for whom they throw those (grass-stems) into the fire. Therefore, he (the Āgnīdhra) should

throw those (grass-stems) into that one of the two fires on which he has (heated and) cleaned (the sacrificial spoons). (He does that) in order to support the cattle (of the Sacrificer).

(*d*) "Thou who art the lord of cattle, Rudra, the bull who walks with the lines of cattle,—do not injure our cattle! Let this (oblation) be offered to thee. Svāhā!" With these words he (the Āgnīdhra) throws into the fire the grass-stems that have been used for the cleaning on the fire; (for) this is their abode, this is their firm resting place. (By doing thus) he brings them to their own abode, to their own resting place. (And consequently) the Sacrificer is firmly established (i.e. prospers) with offspring and cattle.

3.3.3

(*a*) áyajño vā eṣáḥ, yò 'patníkaḥ, ná prajáḥ prájāyeran, pátny ánvāste, yajñám evā 'kaḥ, prajānāṃ prajánanāya, yát tíṣṭhantī saṃnáhyeta, priyáṃ jñātíṁ rundhyāt, āsīnā sáṃnahyate, āsīnā hy èṣā vīryàṃ karoti [1], yát paścāt prācy anvāsīta, anáyā samádaṃ dadhīta, devānāṃ pátniyā samádaṃ dadhīta, déśād dakṣiṇatá údīcy ánvāste, ātmáno gopīthāya.

(*b*) āśāsānā saumanasám íty āha, médhyām evái 'nāṃ kévalīṃ kṛtvā, āśíṣā sámardhayati, agnér ánuvratā bhūtvā sáṃnahye sukṛtāya kám íty āha, etád vái pátniyai vratopanáyanam [2], ténai 'vái 'nāṃ vratám úpanayati, tásmād āhuḥ, yáś cai 'váṃ véda yáś ca ná, yóktram evá yute, yám anvāste, tásyā 'múṣmiṁ loké bhavatī 'ti yóktreṇa, yád yóktram, sá yógaḥ, yád āste, sá kṣémaḥ [3], yogakṣemásya kḷptyai, yuktáṃ kriyātā āśíṣ kāme yujyātā íti, āśíṣaḥ sámṛddhyai.

(*c*) granthíṃ grathnāti, āśíṣa evā 'syāṃ párigṛhṇāti, púmān vái granthíḥ, strī pátnī, tán mithunám, mithunám evā 'sya tád yajñé karoti prajánanāya, prájāyate prajáyā paśúbhir yájamānaḥ [4], átho ardhó vā eṣá ātmánaḥ, yát pátnī, yajñásya dhṛtyā áśithilaṃbhāvāya, suprajāsas tvā vayáṁ supátnīr úpasedimé 'ty āha, yajñám evá tán mithunī karoti, ūné 'tiriktaṃ dhīyātā íti prájātyai.

(*d*) mahīnāṃ páyo 'sy óṣadhīnāṁ rása íty āha, rūpám evā 'syai 'tán mahimānaṃ vyācaṣṭe, tásya té 'kṣiyamāṇasya nírvapāmi devayajyáyā íty āha, āśíṣam evái 'tām āśāste [5].

[This chapter contains ritual and theological explanations referring to the place where the Sacrificer's wife should be seated, and to her girding. At the end of the chapter, the author gives the text of the formula used by the Adhvaryu when he addresses the butter that will be offered to the gods.]

(*a*) Verily that sacrifice where the (Sacrificer's) wife is absent is not a real sacrifice. (If the Sacrificer's wife should be absent,) no children would be born. The wife attends (the sacrifice), (for) it is for the procreation of children that he (the Sacrificer) has undertaken the sacrifice.—If she should gird herself while standing, she would be deprived of a dear relative. She girds herself while she is sitting, for, while sitting, she produces manly strength. If she should attend (the sacrifice) sitting west (of the Gārhapatya fire), with her face turned towards east, she would cause strife with this (earth), she would cause strife with the wife of the gods. She attends (the sacrifice) sitting on the southern side of the place (of the Gārhapatya fire), with her face turned towards north, for the protection of herself.

(*b*) (Speaking for the Sacrificer's wife) he (the Āgnīdhra) says: "Praying for cheerfulness, [offspring, prosperity,]—"[6] Making her entirely pure and fit for the sacrifice, he thus furnishes her with the (right) prayer. He says: "Being devoted to Agni, I gird myself for good action."[7] This is the initiation of the (Sacrificer's) wife into the religious vow. By that, he (the Āgnīdhra) initiates her into the religious vow. Therefore, he who thus knows and he who does not know, they (all) say: "She ties the cord; by the cord she belongs, in yonder (heavenly) world, to that one whom she (here) attends sitting (i.e. her husband, the Sacrificer)." Inasmuch as there is a cord (*yoktra*), there is acquisition (*yoga*). Inasmuch as she sits, there is security. It is for the accomplishment of acquisition and security (or for secure possession of what has been acquired) (that the rite is performed). (He says:) "May junction be made. May the prayer be joined to the object of desire." (Thus he says) for the success of the prayer.

(*c*) He ties a knot. (By doing that) he envelops prayers in her. Verily the knot is a male, and the (sacrificer's) wife is a female. (That is a pair.) That is copulation. It is copulation, indeed, that he (the Āgnīdhra) effects for him (i.e. for the Sacrificer), in the sacrifice, for the sake of procreation. (And consequently) the Sacrificer propagates himself with offspring and cattle. And the wife certainly is the half of one-

[6] TS. 1.1.10.e.
[7] TS. *ibidem*.

self (i.e. the Sacrificer's wife is the half of the Sacrificer). It is for the firmness of the sacrifice, it is in order that it may not become loose (that the girding of the Sacrificer's wife is performed). She (the Sacrificer's wife) says: "Having good offspring, having a good husband, we have come to thee [O Agni, to thee that injurest the foe, to thee the uninjured one, we that are not injured]."[8] (By saying that,) she causes the Sacrifice to copulate (with her). "Into that which is in want may that which is superabundant be placed." Thus (she says) for generation.

(*d*) (Addressing the butter that will be offered to the gods) he (the Adhvaryu) says: "Of the great ones (i.e. the cows) thou art the milk, of plants the sap."[9] (By saying that) he explains the aspect, the greatness of this (oblation). He says: "Of thee that art undiminished, I pour out for the sacrifice to the gods."[10] This he says as a prayer.

3.3.4

(*a*) ghṛtáṃ ca vái mádhu ca prajâpatir āsīt, yáto mádhv āsīt (*corr.*: ásīt) tátaḥ prajâ asṛjata, tásmān mádhuṣi prajánanam ivā 'sti, tásmān mádhuṣā ná prácaranti, yātáyāma hí, ájyena prácaranti, yajñó vâ ájyam, yajñénai 'vá yajñáṃ prácaranty áyātayāmatvāya.

(*b*) pátny áveksate [1], mithunatvâya prájātyai, yád vái pátnī yajñásya karóti, mithunáṃ tát, átho pátniyā evái 'ṣá yajñásya 'nvārambhó 'navacchittyai, amedhyáṃ vâ etát karoti, yát pátny avékṣate, gârhapatyé 'dhiśrayati medhyatvâya.

(*c*) āhavanîyam abhyúddravati, yajñásya sáṃtatyai, téjo 'si téjó 'nu préhí 'ty āha [2], téjo vâ agníḥ, téja ájyam, téjasai 'vá téjaḥ sámardhayati, agnís te téjo mâ vínaid íty āhâ 'hiṁsāyai, sphyásya vártman sādayati, yajñásya sáṃtatyai, agnér jihvâ 'si subhûr devânām íty āha, yathāyajúr evái 'tát, dhâmne-dhāmne devébhyo yájuṣe-yajuṣe bhavé 'ty āha, āśíṣam evái 'tâm áśāste [3].

(*d*) tád vâ átaḥ pavítrābhyām evó 'tpunāti, yájamāno vâ ájyam, prāṇāpānáu pavítre, yájamāna evá prāṇāpānáu dadhāti, punarāhâram, evám iva hí prāṇāpānáu saṃcárataḥ, śukrám asi jyótir asi téjo 'sí 'ty āha, rūpám evâ 'syai 'tán mahimānaṃ vyâcaṣṭe, trír yájuṣā, tráya imé lokâḥ [4], eṣâṃ lokānām âptyai, tríḥ, tryâvṛd dhí yajñáḥ, átho medhyatvâya.

[8] TS. 1.1.10.f.
[9] TS. 1.1.10.i.
[10] TS. *ibidem*.

(*e*) athâ "jyavatībhyām apáḥ, rūpám evâ "sām etád várṇaṃ dadhāti, ápi vâ utâ "huḥ, yáthā ha vái yóṣā suvárṇaṁ híraṇyaṃ peśaláṃ bíbhratī rūpâṇy âste, evám etá etárhí 'ti, âpo vái sárvā devátāḥ [5], eṣâ hí víśveṣāṃ devânāṃ tanúḥ, yád âjyam, tátro 'bháyor mīmāṁsā, jāmíḥ syāt, yád yájuṣā "jyaṃ yájuṣā 'pá utpunīyât, chándasā 'pá útpunāty ájāmitvāya, átho mithunatvâya, sāvitriyâ rcâ, savitṛprasūtaṃ me kármā 'sad íti, savitṛprasūtam evâ 'sya kárma bhavati, pacchó gāyatriyâ triḥṣamṛddhatvâya, adbhír evâu 'ṣadhīḥ sáṃnayati, óṣadhībhiḥ paśûn, paśúbhir yájamānam.

(*f*) śukráṃ tvā śukrâyām jyótis tvā jyótiṣy arcís tvā 'rcíṣ 'ty āha sarvatvâya, páryāptyā ánantarāyāya [6].

[This chapter contains ritual and theological explanations referring to the following rites: the Sacrificer's wife looks down upon the butter; the Adhvaryu puts the pot that contains the butter on the Gārhapatya fire, and then on the Āhavanīya fire; he deposits it on the track of the wooden sword; he addresses the butter; he purifies the butter with the two strainers; he purifies the sprinkling-waters with the strainers; he puts melted butter into the *juhū*, the *upabhṛt*, and the *dhruvā*.]

(*a*) Verily Prajāpati was melted butter and honey. Inasmuch as he was honey he procreated offspring. That is the reason why it is in sweetness, as it were, that procreation takes place. (And) that is the reason why people do not perform sacrifices with honey; for it is of weakened strength (since it has been used by Prajāpati for procreation). They perform sacrifices with melted butter. Verily melted butter is the sacrifice. (Consequently, by performing the sacrifice with melted butter,) they perform the sacrifice with the sacrifice itself, in order to obtain unweakened strength (for the sacrifice).

(*b*) The (Sacrificer's) wife looks down upon (the butter). (She does that) for copulation, for procreation. (For) whatever part of the sacrifice the (Sacrificer's) wife does perform, that is copulation. And this is also the rite by which the (Sacrificer's) wife takes hold of the sacrifice after (the Sacrificer), in order that there may not be separation (i.e. in order that she may not be separated from the sacrifice and the Sacrificer, or that the sacrifice may not be split).—Verily the (Sacrificer's) wife makes that upon which she looks down, unfit for the sacrifice. (Therefore, after he has made her to look down upon the

butter,) he (the Adhvaryu) puts (the pot that contains the butter) on the Gārhapatya fire, for ritual purity (i.e. in order to make the butter fit for the sacrifice).

(*c*) (Then) he runs up to the Āhavanīya fire. (He does that) for the continuity of the sacrifice (i.e. in order to maintain the continuity of the sacrifice). (Carrying the pot that contains the butter away from the Gārhapatya to the Āhavanīya) he says (addressing the butter): "Thou art brilliance; follow the brilliance."[11] Agni (the Fire) is brilliance indeed; (and) the butter is brilliance. (By saying that formula) he (the Adhvaryu) causes the brilliance (of the butter) to be abundantly furnished with the brilliance (of the fire). (Putting the pot on the Āhavanīya fire) he says: "May Agni not take away thy brilliance."[12] (Thus he says) in order not to injure (the butter). He deposits it on the track of the wooden sword, for the continuity of the sacrifice (i.e. in order to maintain the continuity of the sacrifice). He says: "Thou art Agni's tongue, the strength of the gods."[13] This (i.e. the meaning of this) is according to the text of the formula. He says: "Be thou (at hand) for the gods, for every sacrificial place, for every sacrificial formula."[14] This he says as a prayer.

(*d*) That (butter) he then purifies with the two strainers (i.e. with the two blades of Kuśa grass used as strainers). Verily the butter is (i.e. represents) the Sacrificer; (and) the two strainers are (i.e. represent) the outbreath and the inbreath. (Consequently, as he purifies the butter with the two strainers,) he puts outbreath and inbreath (i.e. life) into the Sacrificer. (He purifies the butter with the two strainers) (pushing them forwards and) drawing them back towards himself repeatedly; for it is thus that the outbreath and the inbreath move. (Addressing the butter) he says: "Thou art brightness; thou art light; thou art brilliance."[15] By saying that he explains the aspect, the greatness of it. (He thus purifies the butter) three times with a formula. These worlds are three (earth, atmosphere, and heaven). It is in order to obtain these (three) worlds (that he thus acts three times). (He does that) three times, for the sacrifice is threefold. And (he does that) for ritual purity (i.e. in order to make the butter fit for the sacrifice).

(*e*) Then (he purifies) the (sprinkling-) waters with the two (strainers, i.e. the two blades of Kuśa grass) that are covered with melted butter.[16] (Thereby) that (butter) imparts to them (i.e. to the waters) their beauty, their color. And moreover they say (i.e. some authorities say): "Just as a woman, bearing a lovely golden ornament of beautiful color, sits in splendors,[17] even thus are those (waters) now (after they have been purified with the strainers covered with butter)." Verily the waters are all the deities, (and) that which is the melted butter, certainly is the body (the form, the manifestation) of all the gods. On that point there is the (following) consideration concerning those two (the waters and the melted butter). There would be repetition if he (the Adhvaryu) should purify the butter with a formula (in prose), and the waters with a formula (in prose). He purifies the waters (not with a formula in prose, but) with a text composed in metre (i.e. with a stanza), in order to avoid repetition. And also for copulation (i.e. in order to produce the union of the butter and the waters, considered as forming a pair). (He purifies the waters) with a stanza that refers to Savitar (thinking): "May my work be impelled by Savitar." (He purifies the waters) with a Gāyatrī stanza (which is composed of three pādas), pāda by pāda, in order that the performance may be thrice successful.[18] (As he purifies the waters with the two strainers, i.e. with the two blades of Kuśa grass,) he joins the plants with the waters, cattle with the plants, and the

[11] TS. 1.1.10.l.a.

[12] TS. 1.1.10.l.b.

[13] TS. 1.1.10.m.—The meaning of *subhûr devānām* is doubtful. Keith translated "the good one of the gods." Caland translated "den Göttern willkommen." As an adjective *subhū* means "good" or "strong." I think that here, just as in RV. 1.52.1, *subhū* is a noun, and means "strength." *Cf.* Oldenberg's Commentary on RV. 1.52.1 and Geldner's translation.

[14] TS. 1.1.10.n.

[15] TS. 1.1.10.o.

[16] The form *ājyavatībhyām* is strange for it certainly designates the two strainers, and we should expect *ājyavadbhyām*. Sāyaṇa explains: *yābhyāṃ pavitrābhyām ājyam utpūtaṃ tābhyām evā "liptābhyām apa utpunīyāt*. And he adds: *vyatyayena strīliṅgatvam*.

[17] Quoting this passage of the Tait.-Br., Sāyaṇa, in his commentary, reads: *rūpeṇā "ste* instead of *rūpāṇy āste*. The reading *rūpāṇy āste*, however, certainly is the correct one, for *āste* is sometimes used with the accusative in the meaning of "to sit on," "to sit in," "to dwell among." *Cf.* RV. 3.4.11 and Pāṇini 1.4.51, Vārttika 2, Schol. *kurūn āste*.

[18] This stanza *devó vaḥ savitó 'tpunātv áchidreṇa pávitreṇa, vásoḥ sûryasya raśmíbhiḥ:* "May the god Savitar purify you with a flawless purifier, with the rays of the beneficent sun!" (TS. 1.1.10.p.) is a Gāyatrī stanza.

Sacrificer with cattle (i.e. he furnishes the Sacrificer with cattle).

(*f*) (The Adhvaryu then, in due order, puts melted butter, with the *sruva*, into the *juhū*, the *upabhṛt* and the *dhruvā*, and) he says: "(I take) thee, the shining one, in the shining one [for the gods, for every place, for every formula]. (I take) thee, the light, in the light; (I take) thee, the flame, in the flame [for the gods, for every place, for every formula]."[19] (Thus he acts and says) for completeness, for fulness, for flawlessness (i.e. in order to make the oblations of melted butter complete, abundant and flawless).

3.3.5

(*a*) devāsurâḥ sáṃyattā āsan, sá etám índra ájyasya 'vakāśám apaśyat, téṇā 'vaikṣata, táto devā́ ábhavan, párā 'surāḥ; yá eváṃ vidvā́n ájyam avékṣate, bhávaty ātmánā, párā 'sya bhrātṛvyo bhavati; brahmavādíno vadanti, yádā "jyenā 'nyáni havíṁṣy abhighārayati [1], átha kénā "jyam íti, satyéné 'ti brūyāt, cákṣur vái satyám, satyénai 'vái 'nad abhíghārayati.

(*b*) íśvaró vā́ eṣó 'ndhó bhávitoḥ, yáś cákṣuṣā́ "jyam avékṣate, nimílyā́ 'vekṣeta, dādhārā́ "tmán cákṣuḥ, abhy ájyaṃ ghārayati.

(*c*) ájyaṃ gṛhṇāti [2], chándāṁsi vā́ ájyam, chándāṁsy evá prīṇāti; catúr juhvā́ṃ gṛhṇāti, cátuṣpādaḥ paśávaḥ, paśū́n evā́ 'varundhe; aṣṭā́v upabhṛ́ti, aṣṭā́kṣarā gāyatrí, gāyatráḥ prāṇáḥ, prāṇám evá paśúṣu dadhāti; catúr dhruvā́yām [3], cátuṣpādaḥ paśávaḥ, paśúṣv evó 'páriṣṭāt prátitiṣṭhati; yajamānadevatyà vái juhū́ḥ, bhrātṛvyadevatyò 'pabhṛ́t, catúr juhvā́ṃ gṛhṇán bhū́yo gṛhṇīyāt, aṣṭā́v upabhṛ́ti gṛhṇán kánīyaḥ, yájamānāyai 'vá bhrātṛvyam úpastiṃ karoti; gáur vái srúcaḥ; catúr juhvā́ṃ gṛhṇāti, tásmāc cátuṣpadī [4]; aṣṭā́v upabhṛ́ti, tásmād aṣṭā́śaphā; catúr dhruvā́yām, tásmāc cátustanā; gā́m evá tát sáṁskaroti, sá 'smai sáṁskṛté 'ṣam ū́rjaṃ duhe.

(*d*) yáj juhvā́ṃ gṛhṇāti, prayājébhyas tát; yád upabhṛ́ti, prayajānuyājébhyas tát; sárvasmai vā́ etád yajñā́ya gṛhyate, yád dhruvā́yām ájyam [5].

[This chapter contains ritual and theological explanations referring to the following rites: the Sacrificer, or the Adhvaryu acting for the Sacrificer, looks down upon the melted butter; the Adhvaryu, with the *sruva*, takes melted butter from the pot that contains it, and pours it into the *juhū*, the *upabhṛt*, and the *dhruvā*.]

[19] TS. 1.1.10.q–r.

(*a*) The gods and the Asuras were in conflict. Indra then perceived this formula which is to be recited while fixing the eyes on the melted butter.[20] With this formula he looked down (upon the melted butter). Then the gods were successful, (and) the Asuras were defeated. He who, thus knowing, looks down upon the melted butter, is successful by himself, (and) his rival is defeated.—The expounders of the Veda say: "When the other sacrificial substances are sprinkled with melted butter, then with what is the melted butter sprinkled?" (To that question) one should answer: "With the truth." Truth is the eye indeed. (Inasmuch as one looks down upon the melted butter) it is with truth indeed that one sprinkles that (butter).

(*b*) Verily he who looks down upon the melted butter with his eyes, is liable to become blind. He (the Sacrificer, or the Adhvaryu, acting for the Sacrificer,)[21] should look upon it after closing his eyes. (By doing that) he holds his faculty of seeing in himself (and consequently he does not become blind). (By looking upon the melted butter) he sprinkles the melted butter (with the truth).

(*c*) He (the Adhvaryu) (with the *sruva*) takes melted butter (from the pot, and pours it into the other sacrificial spoons). Verily the melted butter is the metres. (By taking the melted butter for the oblations) he propitiates the metres. Four times he takes (melted butter) in the *juhū*. Cattle are four-footed. (By the fact that he takes melted butter four times in the *juhū*) he obtains cattle (for the Sacrificer). Eight times (he takes melted butter) in the *upabhṛt*. The Gāyatrī verse is of eight syllables; (and) the vital breath is connected with the Gāyatrī verse. (By the fact that he takes melted butter eight times in the *upabhṛt*) he puts the vital breath (i.e. life) into cattle. Four times (he takes melted butter)

[20] According to Sāyaṇa's commentary on this passage of the Tait.-Br., this formula is TS. 1.1.10.m–o: "Thou art Agni's tongue, the strength of the gods," etc.; but according to Āp. 2.6.6, this formula is TS. 1.6.1.b: "Thou art butter, thou art truth, thou art the overseer of truth; thou art the oblation offered to Vaiśvānara, to the Viśve Devāḥ, (the oblation) of purified strength, of true might; thou art power, thou art overpowering; do thou overpower the evil spirits, do thou overpower those who are evil-minded; be victorious in battles, vanquish those who attack; thou art of a thousandfold strength; do thou quicken me; thou art of butter the butter; thou art of truth the truth; thou hast true life; thou hast true strength; with truth I besprinkle thee; may I partake of thee that art such."

[21] According to Āp. 2.6.6, both the Sacrificer and the Adhvaryu look upon the butter after closing their eyes.

in the *dhruvā*. Cattle are four-footed. (By the fact that the Adhvaryu takes melted butter four times in the *dhruvā*) he (the Sacrificer) becomes firmly established above (his) cattle.—Verily the *juhū* has the Sacrificer for its deity, (and) the *upabhṛt* has the rival (of the Sacrificer) for its deity. Taking (melted butter) four times in the *juhū*, he (the Adhvaryu) should take more (than in the *upabhṛt*). Taking (melted butter) eight times in the *upabhṛt*, (he should take) less (than in the *juhū*). (By doing thus) he makes the (Sacrificer's) rival submissive to the Sacrificer.—Verily the sacrificial spoons are (i.e. represent) the cow. Four times he (the Adhvaryu) takes (melted butter) in the *juhū*. That is the reason why she (the cow) has four feet. Eight times (he takes melted butter) in the *upabhṛt*. That is the reason why she (the cow) has eight hoofs (i.e. four cloven hoofs). Four times (he takes melted butter) in the *dhruvā*. That is the reason why she (the cow) has four nipples. (By the fact that he thus takes melted butter in these three sacrificial spoons) he makes the cow perfect. And she, having been made perfect, yields food and strength for him (i.e. for the Sacrificer).

(*d*) That (melted butter) which he (the Adhvaryu) takes in the *juhū*, that is for the fore-offerings; that which he takes in the *upabhṛt*, that is for the fore-offerings and the after-offerings; that melted butter which he takes in the *dhruvā*, that is for the whole sacrifice.

3.3.6

(*a*) ā́po devīr agrepuvo agreguva íty āha, rūpám evā́ "sām etán mahimānaṃ vyácaṣṭe, ágra imā́ṃ yajñā́ṃ nayatā́ 'gre yajñápatim íty āha; ágra evá yajñā́ṃ nayanti, ágre yajñápatim; yuṣmā́n índro 'vṛṇīta vṛtratū́rye yūyám índram avṛṇīdhvaṃ vṛtratū́rya íty āha; vṛtrā́ṁ ha haniṣyánn índra ā́po vavre, ā́po hé 'ndraṃ vavrire; saṃjñā́m evā́ "sām etā́t sā́mānaṃ vyácaṣṭe; prókṣitāḥ sthé 'ty āha [1]; téná "paḥ prókṣitāḥ.

(*b*) agnír devébhyo nílāyata, kr̥ṣṇo rūpáṃ kr̥tvā́, sá vánaspátīn prā́viśat, kr̥ṣṇo 'sy ākhareṣṭhò 'gnáye tvā svā́hé 'ty āha, agnáya evái 'naṃ júṣṭaṃ karoti, átho agnér evá médham ávarundhe, védir asi barhíṣe tvā svā́hé 'ty āha, prajā́ vái barhíḥ, pr̥thiví védiḥ [2], prajā́ evá pr̥thivyā́ṃ prátiṣṭhāpayati; barhír asi srugbhyás tvā svā́hé 'ty āha, prajā́ vái barhíḥ, yájamānaḥ srúcaḥ, yájamānam evá prajā́su prátiṣṭhāpayati.

(*c*) divé tvā 'ntárikṣāya tvā pr̥thivyái tvé 'ti barhír āsā́dya prókṣati, ebhyá evái 'nal lokébhyaḥ prókṣati, átha tátaḥ sahá srucā́ purástāt pratyáñcaṃ granthíṃ prátyukṣati, prajā́ vái barhíḥ, yáthā sū́tyai kālá ā́paḥ purástād yánti [3], tādr̥g evá tát.

(*d*) svadhā́ pitr̥bhya íty āha, svadhākāró hí pitr̥ṇā́m, ū́rgbhava barhiṣádbhya íti dákṣiṇāyai śróṇer ó 'ttarasyai nínayati sáṃtatyai, mā́sā vái pitáro barhiṣádaḥ, mā́sān evá prīṇāti, mā́sā vā́ óṣadhīr vardhā́yanti, mā́sāḥ pacanti sámr̥ddhyai, ánatiskandan ha parjányo varṣati, yátrai 'tád evā́ṃ kriyáte [4], ū́rjā́ pr̥thivíṃ gacchaté 'ty āha, pr̥thivyā́m evó 'rjaṃ dadhāti, tásmāt pr̥thivyā́ ū́rjā́ bhuñjate.

(*e*) granthíṃ víśraṁsayati, prájanayaty evá tát, ū́rdhvā́ṃ prā́ñcam údgūḍhaṃ pratyáñcam ā́yacchati, tásmāt prā́cīnaṁ réto dhīyate, pratīcīḥ prajā́ jayante, víṣṇoḥ stū́po 'sí 'ty āha, yajñó vái víṣṇuḥ [5], yajñásya dhr̥tyai.

(*f*) purástāt prastaráṃ gr̥hṇāti, múkhyam evái 'naṃ karoti, íyantaṃ gr̥hṇāti, prajāpatinā yajñamukhéna sáṃmitam, íyantaṃ gr̥hṇāti, yajñaparúṣā sáṃmitam, íyantaṃ gr̥hṇāti, etā́vad vái púruṣe vīryàm, vīryàsaṃmitam [6], áparimitaṃ gr̥hṇāti, áparimitasyā́ 'varuddhyai, tásmin pavítre ápisr̥jati, yájamāno vái prastaráḥ, prāṇāpānáu pavítre, yájamāna evá prāṇāpānáu dadhāti.

(*g*) ū́rṇāmradasaṃ tvā str̥ṇāmí 'ty āha, yathāyajúr evái 'tát, svāsasthā́ṃ devébhya íty āha, devébhya evái 'nat svāsasthā́ṃ karoti [7], barhíḥ str̥ṇāti, prajā́ vái barhíḥ, pr̥thiví védiḥ, prajā́ evá pr̥thivyā́ṃ prátiṣṭhāpayati, ánatidr̥śnaṁ str̥ṇāti, prajā́yai 'vái 'naṃ paśúbhir ánatidr̥śnaṃ karoti.

(*h*) dhāráyan prastaráṃ paridhín páridadhāti, yájamāno vái prastaráḥ, yájamāna evá tát svayā́ṃ paridhín páridadhāti, gandharvò 'si viśvā́vasur íty āha [8], víśvam evā́ "yur yájamāne dadhāti, índrasya bāhúr asi dákṣiṇa íty āha, indriyám evá yájamāne dadhāti, mitrā́váruṇau tvo 'ttaratáḥ páridhattām íty āha, prāṇāpānáu mitrā́váruṇau, prāṇāpānā́v evā́ 'smin dadhāti, sū́ryas tvā purástāt pātv íty āha, rákṣasām ápahatyai, kásyā́ś cid abhíśas tyā́ íty āha, áparimitād evái 'naṃ pāti [9].

(*i*) vītíhotraṃ tvā kava íty āha, agním evá hotréṇa sámardhayati, dyumántaṁ sámidhīmahí 'ty āha sámiddhyai, ágne br̥hántam adhvará íty āha vr̥ddhyai.

(*j*) viśó yantré stha íty āha, viśā́ṃ yátyai, udīcīnāgre nídadhāti prátiṣṭhityai, vásūnāṁ rudrā́ṇām ādityā́nāṁ sádasi sīdé 'ty āha, devátānām evá sádane prastaráṁ sādayati.

(*k*) juhū́r asi ghr̥tā́cī nā́mné 'ty āha [10], asáu

vái juhúḥ, antárikṣam upabhṛ́t, pṛthivī́ dhruvā́, tā́sām etád evá priyā́ṃ nā́ma, yád ghṛtā́cī 'ti, yád ghṛtā́cī 'ty āha, priyéṇai 'vái 'nā nā́mnā sādayati, etā́ asadan sukṛtásya lokā́ íty āha, satyáṃ vái sukṛtásya lokáḥ, satyā́ evái 'nāḥ sukṛtásya loké sādayati, tā́ viṣṇo pāhí 'ty āha, yajñó vái víṣṇuḥ, yajñásya dhṛ́tyai, pāhí yajñā́ṃ pāhí yajñápatiṃ pāhí mā́ṃ yajñaníyam íty āha, yajñā́ya yájamānāyā "tmáne, tébhya evā́ "śiṣam áśāste 'nārtyai [11].

[This chapter contains ritual and theological explanations referring to the following rites: the Adhvaryu addresses the sprinkling-waters; he sprinkles the firewood; he sprinkles the *vedi* and the sacrificial grass; he sprinkles the knot that ties the bunch of sacrificial grass; he addresses the Fathers (i.e. the deceased ancestors), and pours the rest of the sprinkling-waters, in an uninterrupted jet, from the southwestern corner of the *vedi* to the northwestern corner of it; he unties the knot of the bunch of sacrificial grass; he takes the *prastara;* on the *prastara* he places the two strainers; he spreads the sacrificial strew on the *vedi;* he places the enclosing-sticks around the Āhavanīya fire; he places the kindling-sticks; he takes the two stalks of grass called *vidhṛtis* and places them in the middle of the *vedi;* on these two stalks of grass he puts the *prastara.* On the *prastara* he puts the sacrificial spoons, and he addresses them.]

(*a*) (Addressing the sprinkling-waters) he (the Adhvaryu) says: "O divine Waters, that purify in front, that go in front."[22] By saying that, he declares the aspect of them, their glory.—He says: "Lead this sacrifice in front, the lord of the sacrifice in front."[23] In front, indeed, they lead the sacrifice; in front, the lord of the sacrifice.—He says: "Indra chose you for the contest with Vṛtra; you chose Indra for the contest with Vṛtra."[24] (In fact) Indra, when he was about to slay Vṛtra, chose the Waters (as helpers), and the Waters chose Indra (as helper). By saying that, he (the Adhvaryu) declares the understanding of them (with Indra), their agreement (with him). (Addressing the sprinkling-waters) he says: "You are sprinkled."[25] With that (formula) the waters are sprinkled (i.e. consecrated by sprinkling and consequently fit to be used for sprinkling).

(*b*) (The Adhvaryu then sprinkles the firewood.) (Formerly) the fire hid itself from the gods. Having assumed the form of a black antelope, it entered the trees. (Sprinkling the firewood, and addressing the fire that is hidden in it,) he (the Adhvaryu) says: "Thou art the black antelope, living in the lair. For Agni (I sprinkle) thee. Svāhā!"[26] (By saying that) he makes that one (i.e. the black antelope, i.e. the fire that is hidden in the firewood) agreeable to Agni. And he obtains the sacrificial essence of the fire.—(Then, sprinkling the *vedi,* and addressing it,) he says: "Thou art the *vedi.* For the sacrificial grass (I sprinkle) thee. Svāhā!"[27] Verily the sacrificial grass is (i.e. represents) the offspring (of the Sacrificer), and the *vedi* is the earth. (By saying that formula) he firmly establishes the offspring (of the Sacrificer) on the earth.—(Then, sprinkling the sacrificial grass, and addressing it,) he says: "Thou art the sacrificial grass. For the sacrificial spoons (I sprinkle) thee. Svāhā!"[28] Verily the sacrificial grass is (i.e. represents) the offspring (of the Sacrificer), and the sacrificial spoons are (i.e. represent) the Sacrificer. (By saying that formula) he (the Adhvaryu) firmly establishes the Sacrificer on his offspring.

(*c*) Having put the sacrificial grass (inside the *vedi*), he sprinkles it, saying: "For the Sky (I sprinkle) thee; for the Atmosphere (I sprinkle) thee; for the Earth (I sprinkle) thee."[29] It is for these (three) worlds, indeed, that he sprinkles it.—And then, with the spoon (i.e. holding the spoon that contains the sprinkling-waters), he sprinkles (with the rest of the sprinkling-waters) the knot (that ties the bunch of sacrificial grass) from the front (of the bunch) backwards (i.e. from east towards west, and in such a way that the waters first flow in front of the bunch and then moisten the bunch and its knot). Verily the sacrificial grass is (i.e. represents) offspring. Just as, at the time of parturition, waters flow in front (i.e. before the offspring is delivered), that (i.e. that sprinkling) is just like that.

(*d*) He (the Adhvaryu) says: "Svadhā! to the Fathers!"[30] For the exclamation "svadhā" belongs to the Fathers (the deceased ancestors). And with the words: "Be thou invigorating sap (*or* refreshment) to those who sit on the sacri-

[22] TS. 1.1.5.b.
[23] TS. *ibidem.*
[24] TS. 1.1.5.c.
[25] TS. 1.1.5.d.
[26] TS. 1.1.11.a.
[27] TS. 1.1.11.b.
[28] TS. 1.1.11.c.
[29] TS. 1.1.11.d.
[30] TS. 1.1.11.e.

ficial strew,"[31] he pours (the rest of the sprinkling-waters, in an uninterrupted jet,) from the southern hip (of the *vedi*) to the northern one (of it) (i.e. from the southwestern corner of the *vedi* to the northwestern corner of it). (He does that) for continuity (i.e. for the continuous propagation of the Sacrificer's progeny).[32] Verily the Fathers who sit on the sacrificial strew, are the Months. (Consequently, by pouring the waters and by uttering that formula) he gratifies (he refreshes) the Months. Certainly the Months cause the plants to grow. They ripen them for welfare. Verily Parjanya (the god of rain) rains uniformly there where this (rite) is thus performed.—(Pouring the sprinkling-waters and addressing them) he (the Adhvaryu) says: "Go ye with invigorating sap (*or* refreshment) to the earth."[33] (By saying that he gives invigorating sap (*or* refreshment) to the earth. And therefore they (i.e. people and cattle) enjoy the invigorating sap of the earth (i.e. the food produced by the earth).

(*e*) He (the Adhvaryu) unties the knot (of the bunch of sacrificial grass). By that he causes (people) to procreate (to propagate offspring). That (knot) that has been twisted through upwards and eastwards,[34] he draws back westwards. That is the reason why the seminal fluid is put forwards (into the vulva), and the offspring is born backwards (i.e. comes out of the uterus in the opposite direction).—(Taking the *prastara*, i.e. the handful of sacrificial grass that represents the Sacrificer,) he says: "Thou art the hair-knot of Viṣṇu."[35] Verily Viṣṇu is the sacrifice. It is for the firmness of the sacrifice (i.e. in order to make it firm) (that he utters that formula).

(*f*) (From the bunch of sacrificial grass on which it has been bound uppermost) he takes the *prastara* first. (By doing thus) he makes him (i.e. the Sacrificer) the first (i.e. the chief).—He takes it (i.e. the *prastara*) of such a size that it is equal to Prajāpati, the mouth of the sacrifice. He takes it of such a size that it is equal to a joint of the sacrifice (?).[36] He takes it of such a size—so great, indeed, is manly vigor in man—that it is equal to manly vigor. (Or) he takes it of unlimited size, in order to obtain (for the Sacrificer) that which is unlimited.—On it (i.e. on the *prastara*) he places the two strainers (i.e. the two blades of Kuśa grass used as strainers). Verily the *prastara* is (i.e. represents) the Sacrificer, (and) the two strainers are the outbreath and the inbreath. (By placing the two strainers on the *prastara*,) he puts outbreath and inbreath (i.e. life) into the Sacrificer.

(*g*) (The Adhvaryu then spreads the sacrificial strew on the *vedi*.) He says: "Soft as wool I strew thee, —"[37] This (i.e. the meaning of this) is according to the text of the formula. He says: "—as a good seat for the gods."[38] By saying that, it is for the gods indeed that he makes a good seat. He spreads the sacrificial strew. Verily the sacrificial strew is (i.e. represents) offspring; (and) the *vedi* is (i.e. represents) the earth. (Consequently, by spreading the strew on the *vedi*,) he firmly establishes the offspring (of the Sacrificer) on the earth. He spreads it not thin (*literally* not transparent) (i.e. in such a way that the ground underneath cannot be seen). (By doing thus) he makes him (i.e. the Sacrificer) not thin (*literally* not transparent) (i.e. not poor, but rich) in offspring and cattle.[39]

(*h*) Holding the *prastara* (in his hand), he (the Adhvaryu) places the enclosing-sticks around (the Āhavanīya fire). Verily the *prastara* is (i.e. represents) the Sacrificer. Consequently, it is the Sacrificer himself who places the enclosing-sticks around (the fire). (Placing first the middle stick on the west side of the fire) he (the Adhvaryu) says: "Thou art the Gandharva Viśvāvasu (possessing all wealth) [the fence of the

[31] TS. *ibidem*.
[32] *Cf.* Tait.-Br. 3.2.4.a.
[33] TS. 1.1.11.f.
[34] *Cf.* Tait.-Br. 3.2.2.g.
[35] TS. 1.1.11.g.
[36] *Cf.* Tait.-Br. 3.12.5.12.
[37] TS. 1.1.11.h.
[38] TS. *ibidem*.
[39] Keith translated the parallel passage of the TS. (2.6.5.2): "He strews it so as not to be very discernible; verily he makes him not very discernible by offspring and cattle." In my opinion this translation is unacceptable.—In his commentary on Tait.-Br. 3.3.6.8, Sāyaṇa says: *bhūmisvarūpam atyantaṃ yathā na dṛśyate tathā bahulaṃ stṛṇīyāt. bahuprajāpaśvāvṛto yajamāno 'pi vaideśikair adṛśyaḥ prabhur bhavati.* And in his commentary on TS. 2.6.5.2, he explains: *atiśayena bhūmer darśanam atidṛśnaṃ tad yathā na bhavati tathā stṛṇīyāt. tena yajamānaṃ prajayā paśubhiś ca sarvato veṣṭitatvād iti spaṣṭaṃ draṣṭum ayogyaṃ karoti.* I do not think however that *anatidṛśna* means "not very discernible"; but, with Caland, I think that *anatidṛśna* means "nicht durchsichtig," "not transparent," i.e. "not thin." On the other hand, I do not think that *prajayai 'vai 'naṃ paśubhir anatidṛśnam karoti* means "he makes him not very discernible by the fact that he is surrounded by offspring and cattle"; but I think that it means "he makes him not thin (i.e. not poor, but rich) in offspring and cattle." *Cf. bahur hai 'va prajayā paśubhir bhavati* (Śat.-Br. 1.6.3.30).

Sacrificer, from every attacker, (thou who art) worthy of praise and (art) praised.]"[40] (By saying that) he puts all vital power into the Sacrificer. (Placing the second stick on the south side of the fire) he says: "Thou art the right arm of Indra [the fence of the Sacrificer, (thou who art) worthy of praise and (art) praised]."[41] (By saying that,) he puts manly vigor (*indriyam*) into the Sacrificer. (Placing the third stick on the north side of the fire) he says: "May Mitra and Varuṇa lay thee around in the north with firm law [(thou art) the fence of the Sacrificer, (thou who art) worthy of praise and (art) praised]."[42] Mitra and Varuṇa are the outbreath and the inbreath. (Consequently, by uttering that formula,) he (the Adhvaryu) puts the outbreath and the inbreath (i.e. life) into the Sacrificer. (Then) he says: "May the Sun in the east protect thee from any whatsoever curse."[43] (By saying that,) he protects him (i.e. the Sacrificer) from all (evil).

(*i*) (The Adhvaryu then places the kindling-sticks.) (Placing the southern kindling-stick,) he says: "Thee to whom the oblation is a feast, O wise one, —"[44] (By saying that) he furnishes Agni with (the benefit of) the oblation. He says: "— (thee) the radiant one may we kindle, —"[45] (Thus he says) for kindling. He says: "— O Agni, thee, the mighty one, at the sacrifice."[46] (Thus he says) for growth (i.e. in order to cause the fire to grow).

(*j*) (The Adhvaryu then takes the two stalks of Darbha grass which are called *vidhṛtis* and are used for separating the sacrificial strew from the *prastara;* and, placing them in the middle of the *vedi*,) he says: "Ye two are the barriers of the common people."[47] (Thus he says) for the restraint of the common people (i.e. in order that the Sacrificer may restrain and control the common people).[48] He places them (i.e. the two stalks of Darbha grass) (on the sacrificial strew) with the tops to the north, for firm standing. (On these two stalks of grass he puts the *prastara* with its top to the east, and) he says: "Sit on the seat of the Vasus, Rudras, and Ādityas."[49] (By saying that) it is indeed on the seat of the deities that he seats the *prastara*.

(*k*) (On the *prastara* he puts the sacrificial spoons, which have been filled with butter, and) he says: "Thou art the *juhū*, 'the one abounding in butter' by name. [Sit on thy favorite seat with thy favorite name.]—[Thou art the *upabhṛt*, 'the one abounding in butter' by name. Sit on thy favorite seat with thy favorite name.—Thou art the *dhruvā*, 'the one abounding in butter' by name. Sit on thy favorite seat with thy favorite name.]"[50] Verily the *juhū* is yonder (heavenly world); the *upabhṛt* is the atmosphere; the *dhruvā* is the earth. When he says: "the one abounding in butter," that is the favorite name of those (three spoons). (Consequently) when he says: "the one abounding in butter," he puts them (on the *prastara*) with their favorite name. He says: "These ones have sat down in the world of good action."[51] Verily the world of good action is truth. (Consequently) it is in truth, in the world of good action, that he puts these (three spoons). He says: "Protect them, O Viṣṇu!"[52] Verily Viṣṇu is the sacrifice. It is for the firmness of the sacrifice (i.e. in order to make it firm) (that he recites that formula). (Then) he says: "Protect the sacrifice, protect the lord of the sacrifice, protect me, the leader of the sacrifice."[53] It is for the sacrifice, for the Sacrificer, and for himself, it is for these (three) indeed that he (the Adhvaryu) says that as a prayer, in order to avoid painful occurrence.

3.3.7

(*a*) agnínā vái hótrā devā́ ásurān abhyàbhavan; agnáye samidhyámānāyā́ 'nubrūhí 'ty āha, bhrā́tṛvyābhibhūtyai; ékaviṁśatim idhmadārū́ṇi bhavanti, ekaviṁśó vái púruṣaḥ, púruṣasyā́ "ptyai; páñcadaśe 'dhmadārū́ṇy abhyā́dadhāti, páñcadaśa vā́ ardhamā́sasya rā́trayaḥ, ardhamā-

[40] TS. 1.1.11.i.
[41] TS. 1.1.11.k.
[42] TS. 1.1.11.l.
[43] TS. 1.1.11.m.
[44] TS. 1.1.11.n.—Caland translated *vītihotram* "den zum Mahle einladenden"; and Keith translated "that dost invite to the sacrifice." But, according to Sāyaṇa's commentary: *vītaye vyāptaye samṛddhaye hotraṃ homo yasya taṃ vītihotram*, and according to the text of the following sentence of the Brāhmaṇa: *agním evá hotréṇa sámardhayati*, it is evident that the second element of the compound is *hotra* "oblation" and not *hotrā* "invitation." I translated *vītihotram* "to whom the oblation is a feast"; but other interpretations of the compound are possible. It may mean: "whose oblation (offered to the gods) is for (their) enjoyment," or "whose oblation (offered to the gods) is a feast (to them)."
[45] TS. *ibidem*.
[46] TS. *ibidem*.
[47] TS. 1.1.11.o.
[48] *Cf.* Śat.-Br. 1.3.4.10.
[49] TS. 1.1.11.p.
[50] TS. 1.1.11.q.
[51] TS. 1.1.11.r.
[52] TS. 1.1.11.s.
[53] TS. 1.1.11.t.

saśaḥ saṃvatsará āpyate; tríṇ paridhíṇ páridadhāti [1], ūrdhvé samídhāv ádadhāti, anūyājébhyaḥ samídham átiśinaṣṭi, ṣáṭ sámpadyante, ṣáḍ vā ṛtávaḥ, ṛtún evá prīṇāti.

(*b*) vedéno 'pavājayati, prājāpatyó vái vedáḥ, prājāpatyáḥ prāṇáḥ, yájamāna āhavanīyaḥ, yájamāna evá prāṇáṃ dadhāti [2], trír úpavājayati, tráyo vái prāṇáḥ, prāṇán evā 'smin dadhāti.

(*c*) vedéno 'payatya sruvéṇa prājāpatyám āghārám āghārayati, yajñó vái prajāpatiḥ, yajñám evá prajāpatiṃ mukhatá ārabhate, átho prajāpatiḥ sárvā devátāḥ, sárvā evá devátāḥ prīṇāti.

(*d*) agníṃ agnīt trís-triḥ sáṃmṛddhí 'ty āha, tryàvṛd dhí yajñáḥ [3], átho rákṣasām ápahatyai; paridhíṇ sáṃmārṣṭi, punáty evái 'nān; trís-triḥ sáṃmārṣṭi, tryàvṛd dhí yajñáḥ, átho medhyatváya; átho eté vái devāśváḥ, devāśván evá tát sáṃmārṣṭi, suvargásya lokásya sámaṣṭyai. áśino 'nyám āghārám āghārayati [4], tíṣṭhann anyám; yáthā 'no vā ráthaṃ vā yuñjyát, evám evá tád adhvaryúr yajñáṃ yunakti suvargásya lokásyā 'bhyūḍhyai; váhanty enaṃ grāmyáḥ paśávaḥ, yá eváṃ véda.

(*e*) bhúvanam asi víprathasvé 'ty āha, yajñó vái bhúvanam, yajñá evá yájamānaṃ prajáyā paśúbhiḥ prathayati; ágne yáṣṭar idáṃ náma íty āha [5], agnír vái devānāṃ yáṣṭā, yá evá devānāṃ yáṣṭā, tásmā evá námaskaroti. júhv éhy agnís tvā hvayati devayajyáyā úpabhṛd éhi devás tvā savitā hvayati devayajyáyā íty āha, āgneyí vái juhūḥ, sāvitry ùpabhṛt, tábhyām evái 'ne prásūta ādatte; ágnāviṣṇū má "vām ávakramiṣam íty āha, agníḥ purástāt, víṣṇur yajñáḥ paścát [6], tábhyām evá pratiprócyā 'tyákrāmati, víjihāthāṃ má mā sáṃtāptam íty āhā 'hiṁsāyai; lokáṃ me lokakṛtau kṛṇutam íty āha, āśíṣam evái 'tám āśāste.

(*f*) víṣṇoḥ sthānam así 'ty āha, yajñó vái víṣṇuḥ, etát khalu vái devānām áparājitam āyátanam, yád yajñáḥ, devānām evā 'parājita āyátane tiṣṭhati; itá índro akṛṇod vīryāṇí 'ty āha [7], indriyám evá yájamāne dadhāti; samārábhyo 'rdhvó adhvaró divispṛśam íty āha vṛddhyai; āghārám āghāryámāṇam ánu samārábhya, etásmin kālé devāḥ suvargáṃ lokám āyan; sākṣád evá yájamānaḥ suvargáṃ lokám eti, átho sámṛddhenai 'vá yajñéna yájamānaḥ suvargáṃ lokám eti; áhruto yajñó yajñápater íty āhā 'nārtyai, índrāvānt svāhé 'ty āha, indriyám evá yájamāne dadhāti; bṛhád bhā íty āha [8], suvargó vái lokó bṛhád bhāḥ, suvargásya lokásya sámaṣṭyai.

(*g*) yajamānadevatyā́ vái juhū́ḥ, bhrātṛvyadevatyò 'pabhṛ́t, prāṇá āghārā́ḥ, yát saṁsparśáyet, bhrātṛvye 'sya prāṇáṃ dadhyāt, ásaṁsparśayann atyákrāmati, yájamāna evá prāṇáṃ dadhāti; pāhí mā 'gne dúścaritād, ā́ mā súcarite bhajé 'ty āha [9], agnír vā́vá pavítram, vṛjinám ánṛtaṃ dúścaritam, ṛjukarmáṁ satyáṁ súcaritam, agnír evái 'naṃ vṛjinād ánṛtād dúścaritāt pāti, ṛjukarmé satyé súcarite bhajati, tásmād evám ā́śāste, ātmáno gopīthāya.

(*h*) śíro vā́ etád yajñásya, yád āghārā́ḥ, ātmā́ dhruvā́ [10], āghārám āghā́rya dhruvā́ṁ sámanakti, ātmánn evá yajñásya śíraḥ prátidadhāti, dvíḥ sámanakti, dváu hí prāṇāpānáu, tád āhuḥ, trír evá sámañjyāt, tridhātu hí síra íti, śíra ivai 'tád yajñásya, átho tráyo vái prāṇā́ḥ, prāṇán evā́ 'smin dadhāti; makhásya śíro 'si sáṃ jyótiṣā jyótir aṅktām íty āha, jyótir evā́ 'smā upáriṣṭād dadhāti, suvargásya lokásyā́ 'nukhyātyai [11].

[This chapter contains ritual and theological explanations referring to the following rites: the Adhvaryu invites the Hotar to recite the *sāmidhenī* stanzas, i.e. the stanzas relating to the kindling of the fire; he puts the fifteen kindling-sticks on the Āhavanīya fire; he puts three sticks as enclosing-sticks around the fire; he puts upright two sticks that are to be used for the two *āghāras* (the two libations of butter); he leaves remaining one kindling-stick for the after-offerings; he fans the Āhavanīya fire with the *veda;* he makes the first *āghāra.*—The Āgnīdhra sweeps the three enclosing-sticks. The Adhvaryu lays his joined hands on the *vedi* before the *juhū* and the *upabhṛt;* he takes the *juhū* in his right hand; he takes the *upabhṛt* in his left hand. When he is about to walk northwards, he addresses Agni and Viṣṇu. He takes his place at the south-western corner of the Āhavanīya fire; he pours the second libation of butter into the fire; he lifts up the *juhū;* he walks back northwards, avoiding bringing the two spoons into contact; he addresses a prayer to Agni. He pours the rest of the melted butter from the *juhū* into the *dhruvā.*]

(*a*) Verily it was with Agni as Hotar that the gods defeated the Asuras. He (the Adhvaryu, addressing the Hotar,) says: "Recite to Agni (the Fire) as he is kindled." (Thus he says) for the defeat of the (Sacrificer's) enemy.—The kindling-sticks are twenty-one.[54] Verily the man (who represents the sacrifice)[55] consists of twen-

[54] The accusative *ekaviṁśatim* is strange. I suppose that it is used adverbially. *Cf.* Whitney's Grammar 276, *a–b.*

[55] *Cf.* Śat.-Br. 1.3.2.1.

ty-one parts. It is in order to obtain the man (i.e. the sacrifice) (that the kindling-sticks are twenty-one). He (the Adhvaryu) puts fifteen kindling-sticks on the fire. The nights of a half month are fifteen. (Consequently, by the fact that the Adhvaryu puts fifteen kindling-sticks on the fire,) the year (which consists of 360 nights) is obtained by means of the (twenty-four) half months (of fifteen nights each).—He (the Adhvaryu) lays three (sticks as) enclosing-sticks around (the fire). He puts two kindling-sticks upright.[56] He leaves remaining one kindling-stick for the after-offerings. (Together) they amount to six. The Seasons are six. (Consequently, by doing so,) he gratifies the Seasons.

(*b*) With the *veda* (i.e. the bunch of strong grass that is used for sweeping the sacred fires) he fans (the Āhavanīya fire). Verily the *veda* is of Prajāpati's nature (for it was created by Prajāpati), (and) the vital breath is of Prajāpati's nature (for it was created by Prajāpati), (and) the Āhavanīya (fire) is (i.e. represents) the Sacrificer. (By the fact that he fans the Āhavanīya fire with the *veda*) he (the Adhvaryu) puts the vital breath into the Sacrificer. He fans (the fire) three times. The vital breaths are three indeed. (By the fact that he fans the fire three times) he puts the (three) vital breaths (i.e. *prāṇa*, *apāna*, and *vyāna*, i.e. life) into the Sacrificer.

(*c*) Holding the *veda* under (the *sruva*, i.e. the sipping-spoon), he (the Adhvaryu), with the *sruva*, makes the (first) *āghāra* (i.e. the first libation of butter), which is offered to Prajāpati. Verily Prajāpati is the sacrifice. (Consequently, by the fact that he offers the first libation of butter to Prajāpati) he (the Adhvaryu, acting for the Sacrificer,) takes hold of the sacrifice, (i.e.) of Prajāpati, at the very opening (of the sacrifice). And Prajāpati is all deities. (Consequently) he (the Adhvaryu) (by that libation) gratifies all deities.

(*d*) (Then, addressing the Āgnīdhra) he says: "Agnīdh, sweep the fire (i.e. the three enclosing-sticks of the fire) three times each."[57] For the sacrifice is threefold. (And the Āgnīdhra does that) also in order to drive away the Rakṣases. He (the Āgnīdhra) sweeps the (three) enclosing-sticks. (By doing that) he cleans them. He sweeps them three times each, for the sacrifice is threefold. (And he does that) also in order to make them fit for the sacrifice. And verily these (enclosing-sticks) are the horses of the gods. Consequently (by the fact that he sweeps the enclosing-sticks) he rubs the horses of the gods in order that they may reach the heavenly world.—Sitting, he (the Adhvaryu) makes one libation of butter (i.e. the first *āghāra*). Standing, (he will make) the other.—Just as one would yoke a cart or a chariot, just so the Adhvaryu yokes the sacrifice in order that it may be conveyed to the heavenly world. Domestic animals (i.e. oxen and horses) convey him who thus knows.

(*e*) (After the first *āghāra*, the Adhvaryu lays his joined hands on the *vedi* before the *juhū* and the *upabhṛt*, and) he says: "Thou art the world. Be extended."[58] Verily the sacrifice is the world. (And) it is the sacrifice that causes the Sacrificer to extend with progeny and cattle. He says: "O Agni, sacrificer, (to thee) this reverence."[59] Verily Agni is the sacrificer of the gods. It is to him, who is the sacrificer of the gods, that he (the Adhvaryu) makes reverence.—(Taking the *juhū* in his right hand) he says: "O *juhū*, come hither: Agni summons thee for the sacrifice to the gods."[60] (And taking the *upabhṛt* in his left hand, he says:) "O *upabhṛt*, come hither; the god Savitar summons thee for the sacrifice to the gods."[61] Verily the *juhū* belongs to Agni, (and) the *upabhṛt* belongs to Savitar. It is with these

[56] These two kindling-sticks are to be used for the two *āghāras*, the two libations of butter (*cf.* Āp. 2.9.9). They are put upright in order to smite away the Rakṣases upwards (*cf.* TS. 2.6.6.3).

[57] The text of the *saṃpraiṣa* (the order) of the Adhvaryu is the same in Tait.-Br. 3.3.7.3 and in Śālīki (see Baudh. 20.12), but it is different in Baudh. 1.15, Āp. 2.12.10, Hiraṇyakeśin, Aupamanyava (see Baudh. 20.12), and in the Mānava Śrautasūtra. In Baudh., it is: *agnīd agnīṃs tristriḥ saṃmṛḍḍhi*. In Āp., Hiraṇyakeśin, Aupamanyava, and Mānava, it is *agnīt paridhīṃś cā 'gniṃ ca tristriḥ saṃmṛḍḍhi*. I think, however, that the text of the Tait.-Br. is the original one, and that it was changed because of the anomaly of *tristriḥ* used with the singular *agnim*. My interpretation is based on the following facts: (1) all texts agree in stating that, after the *saṃpraiṣa* of the Adhvaryu, the Āgnīdhra sweeps the three enclosing sticks; (2) the TS. (2.5.11.6) does not mention the sweeping of the fire; (3) it seems difficult to imagine how one could really sweep the blazing fire; (4) the iterative compound, which has a distributive meaning, clearly indicates that the real object of *saṃmṛḍḍhi* is a plural, i.e., I think, *paridhīn*.—According to Baudhāyana, the *saṃpraiṣa* of the Adhvaryu is *agnīd agnīṃs tristriḥ saṃmṛḍḍhi*, and after that, the Āgnīdhra sweeps three times each of the *paridhis*, and fans (but does not sweep) three times the Āhavanīya fire.

[58] TS. 1.1.12.a.

[59] TS. 1.1.12.b.

[60] TS. 1.1.12.c.

[61] TS. 1.1.12.d.

two (formulas) that he (the Adhvaryu), having been impelled (by those two deities, Agni and Savitar), takes these two (offering-spoons).—(When he is about to step southwards in front of the offering-spoons and behind the middle enclosing-stick, which is on the west side of the Āhavanīya fire,) he (the Adhvaryu) says: "O Agni and Viṣṇu, let me not step down upon you."[62] Agni (who is represented by the Āhavanīya fire) is in front (i.e. in the east). Viṣṇu, the sacrifice, (who is represented by the offering-spoons) is behind (i.e. in the west). It is after having announced it to those two that he walks over (southwards, between them). He says: "Be ye parted, scorch me not."[63] (Thus he says) in order to avoid injury. He says: "Make ye two a place for me, ye place-makers."[64] This he says as a prayer.

(*f*) (Taking his place at the southwestern corner of the Āhavanīya fire place, and standing,) he says: "Thou art the abode of Viṣṇu."[65] Verily Viṣṇu is the sacrifice; and certainly the sacrifice is the unconquered place of the gods. (Consequently) it is on the unconquered place of the gods that he stands. He says: "Hence Indra wrought heroic deeds."[66] (By saying that) he bestows manly power (*indriyam*) on the Sacrificer. (Then, standing erect, he pours out, with the *juhū*, the libation of butter into the fire, and) he says: "Standing erect, the religious service, having grasped that which touches heaven, —"[67] (This he says) for success. (Formerly) having taken fast hold of the libation of butter, while it was offered, the gods, at that point of time (i.e. immediately) went to the heavenly world. Evidently indeed the Sacrificer (also) goes to the heavenly world; and it is by means of the successful sacrifice that the Sacrificer goes to the heavenly world. He (the Adhvaryu, continuing,) says: "— the sacrifice of the lord of the sacrifice does not stumble, —"[68] (Thus he says) in order to avoid painful occurrence. And he says: "— being accompanied by Indra. Svāhā!"[69] (By saying that) he bestows manly power on the Sacrificer. (Lifting up the *juhū*) he says: "The great light."[70] Verily the great light is the heavenly world. (Thus he says) in order to obtain the heavenly world (for the Sacrificer).

(*g*) (Then he walks back northwards, carefully avoiding bringing the two spoons into contact.) Verily the *juhū* has the Sacrificer for its deity, the *upabhṛt* has his rival for its deity, (and) the butter libation is the vital breath. If he (the Adhvaryu) should bring (the *juhū* and the *upabhṛt*) into contact, he would put the vital breath of this one (i.e. of the Sacrificer) into his rival. He walks over (northwards) without bringing (the two spoons) into contact. (By doing thus) he puts the vital breath into the Sacrificer. (Speaking for the Sacrificer,) he (the Adhvaryu) says: "Guard me, O Agni, from evil action; give me a share in good action."[71] Verily Agni is a means of purification. Evil action is deceit, falsehood. Good action is upright action, truthfulness. It is Agni, indeed, who guards him (the Sacrificer) from deceit, falsehood, bad action, (and) gives him a share in upright action, truthfulness, good action. That is the reason why he thus prays. It is in order to protect himself (i.e. the Sacrificer).

(*h*) (The Adhvaryu then anoints the *dhruvā*, the largest offering-spoon, i.e. he pours the rest of the melted butter from the *juhū* into the *dhruvā*.) Verily the *āghāra* (the butter libation) is the head of the sacrifice, (and) the *dhruvā* is the trunk of its body. Having offered the libation of butter, he (the Adhvaryu) anoints the *dhruvā*. (By doing that) he puts the head of the sacrifice on the trunk of its body. He anoints (the *dhruvā*) twice, for (the vital breaths,) the *prāṇa* (outbreath) and the *apāna* (inbreath) are two. On this subject (however) they say (i.e. some authorities say): "He should anoint (the *dhruvā*) three times, for the head consists of three parts; (and) this (i.e. the libation of butter) is the head of the sacrifice as it were; and verily the vital breaths are three (*prāṇa*, *apāna*, and *vyāna*). (Consequently, by anointing the *dhruvā* three times,) he puts the (three) vital breaths into him (i.e. into the Sacrificer)." (Anointing the *dhruvā*) he says: "Thou art the head of Makha. Let the light anoint itself with light." (By saying that) he bestows light upon him (the Sacrificer) from above. (And he says that) for the revealing of the heavenly world.

3.3.8

(*a*) dhíṣṇiyā vá eté nyùpyante, yád brahmā́, yád dhótā, yád adhvaryúḥ, yád agnít, yád yája-

[62] TS. 1.1.12.e.
[63] TS. 1.1.12.f.
[64] TS. 1.1.12.g.
[65] TS. 1.1.12.h.
[66] TS. 1.1.12.i.
[67] TS. 1.1.12.k.
[68] TS. 1.1.12.l.
[69] TS. 1.1.12.m.
[70] TS. 1.1.12.n.
[71] TS. 1.1.12.o.

mānaḥ; tán yád antareyát, yájamānasya prāṇánt sáṃkarṣet, pramāyukaḥ syāt; purodáśam apagṛ́hya sáṃcaraty adhvaryúḥ [1], yájamānāyai 'vá tál lokáṁ śiṁṣati, ná 'sya prāṇánt sáṃkarṣati, ná pramāyuko bhavati.

(*b*) purástāt pratyáṅṅ āsīnaḥ, íḍāyā íḍām ádadhati, hástyāṁ hótre; paśávo vā́ íḍā, paśávaḥ púruṣaḥ, paśúṣv evá paśún prátiṣṭhāpayati; íḍāyai vā́ eṣá prájātiḥ [2], tā́m prájātiṃ yájamānó 'nu prájāyate; dvír aṅgúlāv anakti párvaṇoḥ, dvipād yájamānaḥ, prátiṣṭhityai; sakṛ́d úpastṛṇāti, dvír ádadhāti, sakṛ́d abhíghārayati; catúḥ sáṃpadyate, catvā́ri vái paśóḥ pratiṣṭhā́nāni; yā́vān evá paśúḥ, tám úpahvayate [3]; múkham iva práty úpahvayeta, saṃmukhā́n evá paśún úpahvayate.

(*c*) paśávo vā́ íḍā, tásmāt sā́ 'nvārábhyā, adhvaryúṇā ca yájamānena ca; úpahūtaḥ paśumā́n asānī 'ty āha, úpa hy ènau hváyate hótā, íḍāyai devátānām upahavé; úpahūtaḥ paśumā́n bhavati, yá eváṃ véda [4]; yā́ṃ vái hástyām íḍām ādádhāti, vācáḥ sā́ bhāgadhéyam, yā́m upahváyate, prāṇā́nāṁ sā́, vā́caṃ cai 'vá prāṇā́iṁś cā́ 'varundhe.

(*d*) átha vā́ etárhy úpahūtāyām íḍāyām, purodā́śasyai 'vá barhiṣádo mīmāṁsā́; yájamānaṃ devā́ abruvan, havír no nírvapé 'ti, nā́ 'hám abhāgó nírvapsyāmī 'ty abravīt [5]; ná máyā 'bhāgáyā 'nuvakṣyathé 'ti vā́g abravīt; nā́ 'hám abhāgā́ puro 'nuvā́kyā́ bhaviṣyāmī 'ti puro 'nuvā́kyā́; nā́ 'hám abhāgā́ yājyā́ bhaviṣyāmī 'ti yājyā́; ná máyā 'bhāgéna vāṣaṭkariṣyathé 'ti vaṣaṭkārāḥ; yád yajamānabhāgáṃ nidhā́ya purodā́śaṃ barhiṣádaṃ karóti, tā́n evá tád bhāgínaḥ karoti.

(*e*) caturdhā́ karoti, cátasro díśaḥ, dikṣv èvá prátitiṣṭhati; barhiṣádaṃ karoti [6], yájamāno vái purodā́śaḥ, prajā́ barhíḥ, yájamānam evá prajā́su prátiṣṭhāpayati, tásmād asthnā́ 'nyā́ḥ prajā́ḥ pratitíṣṭhanti, māṁsénā 'nyā́ḥ; átho khálv āhuḥ, dákṣiṇā vā́ etā́ haviryajñásya 'ntarvedy ávarudhyante, yát purodā́śaṃ barhiṣádaṃ karótī 'ti caturdhā́ karoti, catvāro hy èté haviryajñásya rtvíjaḥ [7], brahmā́ hótā 'dhvaryúr agnī́t; tám abhímṛśet, idáṃ brahmáṇaḥ, idáṁ hótuḥ, idám adhvaryóḥ, idám agnídha íti; yáthai 'vā́ 'dáḥ saumyé 'dhvaré, ādéśam ṛtvígbhyo dákṣinā nīyánte, tādṛ́g evá tát.

(*f*) agnídhe prathamā́yā "dadhāti [8], agnímukhā hy ṛ́ddhiḥ, agnímukhām evá rddhiṃ yájamāna ṛdhnoti.—sakṛ́d upastírya dvír ādádhat, upastírya dvír abhíghārayati; ṣáṭ sáṃpadyante, ṣáḍ vā ṛ́távaḥ, ṛtū́n evá prīṇāti.

(*g*) vedéna brahmáṇe brahmabhāgáṃ pári-harati, prājāpatyó vái vedáḥ, prājāpatyó brahmā́ [9], savitā́ yajñásya prásūtyai; átha kā́mam anyéna; táto hótre, mádhyaṃ vā́ etád yajñásya, yád dhótā, madhyatá evá yajñáṃ prīṇāti; áthā 'dhvaryáve, pratiṣṭhā́ vā́ eṣā́ yajñásya, yád adhvaryúḥ; tásmād dhaviryajñásyai 'tā́m evā́ "vṛtam ánu [10], anyā́ dákṣiṇā nīyante, yajñásya prátiṣṭhityai.

(*h*) agnīm agnīt sakṛ́t-sakṛt sáṃmṛḍḍhí 'ty āha, párāñ iva hy ètárhi yajñáḥ.—iṣitā́ dáivyā hótāra íty āha, iṣitáṁ hí kárma kriyáte; bhadravā́cyāya; préṣito mānuṣaḥ sūktavākā́ya, sūktā́ brūhí 'ty āha, āśíṣam evái 'tā́m áśāste.

(*i*) svagā́ dáivyā hótṛbhya íty āha, yajñám evá tát svagā́ karoti; svastír mānuṣebhya íty āha, āśíṣam evái 'tā́m áśāste; śaṃyór brūhí 'ty āha, śaṃyúm evá bārhaspatyáṃ bhāgadhéyena sámardhayati [11].

[This chapter contains ritual and theological explanations referring to the following rites: the Adhvaryu walks about in order to give a portion of the *iḍā* to the four priests and the Sacrificer, and he avoids going between them; he puts the *avāntareḍā* in the hand of the Hotar; the Hotar calls the *iḍā*; the Adhvaryu recites a formula; the Adhvaryu places separately the share of the Sacrificer; he puts the sacrificial cake on the sacrificial grass; he divides the sacrificial cake into four parts; the Sacrificer touches the four parts of the sacrificial cake, assigning one to each of the four priests; the Adhvaryu gives to the Āgnīdhra his share first; he puts the share of the Brahmán on the *veda* and carries it to him; he gives to the Hotar his share, and finally to himself his share; he orders the Āgnīdhra to sweep the enclosing-sticks. After the *anuyājas*, he addresses the Hotar, and the Hotar recites the *sūktavāka*. The Adhvaryu orders the Hotar to recite the *śaṃyoḥ*, i.e. the invocation of health and wealth.]

(*a*) Verily these ones, namely the Brahmán, the Hotar, the Adhvaryu, the Āgnīdhra, and the Sacrificer (who are about to receive a portion of the *iḍā*) are the Dhiṣṇiyas (the altars) that are bestrewed (with sand).[72] If the Adhvaryu (walking

[72] Or more literally: "Verily, (as) Dhiṣṇiyas, these ones are bestrewed, namely the Brahmán, the Hotar, the Adhvaryu, the Āgnīdhra, and the Sacrificer."—The Dhiṣṇiyas are small altars, i.e. heaps of earth which are bestrewed with sand. Although Dhiṣṇiyas are not made for the full-moon and new-moon sacrifices, but only for the Soma sacrifices, the Brahmán, the Hotar, the Adhvaryu, the Āgnīdhra, and the Sacrificer, who are about to receive a portion of the *iḍā*, are here identified with the Dhiṣṇiyas,

about in order to give a portion of the *iḍā* to those five, i.e. the four priests and the Sacrificer,) were to go between them, he would shrink the vital breaths of the Sacrificer, and he (the Sacrificer) would be liable to die. The Adhvaryu walks about after having taken away the sacrificial cake. By doing so, he leaves an open place for the Sacrificer. He does not shrink his vital breaths. (And) he (the Sacrificer) is not liable to die.[73]

(*b*) Sitting in front (of the *iḍā*), with his face turned westwards, he (the Adhvaryu) puts the *iḍā* of the *idā* (i.e. the *avāntareḍā*, which is a portion of the *iḍā*) in the hand of the Hotar. Verily the *iḍā* is cattle, (and) the man (i.e. the Hotar) is cattle. (Consequently) he (the Adhvaryu, by putting the *avāntareḍā* in the hand of the Hotar,) firmly establishes cattle in cattle. This (i.e. the *avāntareḍā*) is the offspring of the (common) *iḍā*. As a consequence of this procreation, the Sacrificer procreates offspring. Twice he (the Adhvaryu) anoints the (Hotar's) (fore)finger, (i.e. he separately anoints) the two joints (of it). The Sacrificer has two feet. It is in order that he may have a firm stand (that the Adhvaryu does that).—Once he (the Adhvaryu) pours out clarified butter so as to form a lower layer. Twice he puts (a portion of the *iḍā* in the hand of the Hotar). Once he pours a libation of butter (on it). This amounts to four (operations). Verily the feet of cattle are four. (Consequently, when the Hotar calls the *iḍā*, which is identified with cattle,) he calls the cattle just as they are (just as great as they are). He (the Hotar) should call (the *iḍā*, which is in his hand,) towards his mouth as it were. (In doing that) he is indeed calling the cattle that are facing him.[74]

(*c*) Verily the *iḍā* is cattle. Therefore it should be seized from behind by the Adhvaryu and the Sacrificer. He (the Adhvaryu) says: "Having been called, may I be rich in cattle."[75] Verily, the Hotar calls (also) those two (the Adhvaryu and the Sacrificer) when he calls the deities of the *iḍā*.[76] Having been called, he becomes rich in cattle, he (the Sacrificer) who thus knows. Verily the *iḍā* that he (the Adhvaryu) puts in the hand (of the Hotar) is the share of Speech. The one he (the Hotar) calls is (the share) of the vital breaths. (Consequently) he (the Sacrificer) obtains speech and life.

(*d*) And now, a reflection concerning the sacrificial cake that is put on the sacrificial grass after the *iḍā* has been called.—The gods said to the Sacrificer: "Offer us the oblation." He said: "If I do not receive a share (of it), I shall not offer it." The Speech said: "If I do not receive a share (of it), you will not be invited by me." The *puro 'nuvākyā* (the invitation-verse) said: "If I do not receive a share (of it), I shall not be the *puro 'nuvākyā* (for you)." The *yājyā* (the oblation-verse) said: "If I do not receive a share (of it), I shall not be the *yājyā* (for you)." The *vaṣaṭkāra* (the exclamation *vaṣaṭ*) said: "If I do not receive a share (of it), I shall not utter the *vaṣaṭkāra* for you."—When he (the Adhvaryu) places (separately) the share of the Sacrificer, and puts the sacrificial cake on the sacrificial grass, he (by doing that) causes these ones (i.e. the Sacrificer, the Speech, the *puro 'nuvākyā*, the *yājyā*, and the *vaṣaṭkāra*) to have a share (of the oblation).

(*e*) He divides (the sacrificial cake) into four parts. The quarters are four. (Consequently, by the fact that the cake is divided into four parts,) he (the Sacrificer) is firmly established in the (four) quarters. He (the Adhvaryu) puts (the sacrificial cake) on the sacrificial grass. Verily the sacrificial cake is (i.e. represents) the Sacrificer, (and) the sacrificial grass is (i.e. represents) the offspring (of the Sacrificer). (Consequently) he (the Adhvaryu, by putting the cake on the sacrificial grass,) firmly establishes (the authority of) the Sacrificer over his children. (And) therefore (i.e. because the cake, which is hard, is placed on the sacrificial grass, which is soft,) some children stand firm on account of

which are covered with sand. And the Dhiṣṇiyas are identified with the vital breaths, for it is said in TS. (6.3.1.5): "The Dhiṣṇiyas are the vital breaths."

[73] In his commentary on this passage, Sāyaṇa says: *te ca dhiṣṇiyāḥ somayāge vedikāsadṛśā mṛnmayāḥ kriyante . . . . , teṣāṃ ca dhiṣṇiyānām atikramaṇaṃ tatrai 'va niṣiddham . . . . , tadvad atrā 'pī 'ḍābhāgabhakṣaṇārthaṃ vedyā uttarabhāge sthitānāṃ brahmādīnāṃ madhye saṃcāre prāṇāpaharaṃ badhakam upanyasya tatpariharāya bhakṣyaṃ puroḍāśabhāgam apacchidya tebhya pradānāya haste dhṛtvā saṃcared iti vidyate, tena yajñavighnābhāvād yajamānasya svargalokam avaśeṣayati, iha loke prāṇabādho na bhavati.*—The meaning of the passage is not clear. Its source certainly is TS. 6.3.1.5, which deals with the Soma sacrifice: *yád adhvaryúḥ pratyáṅ dhiṣṇiyān atisarpet prāṇáñ sáṃkarṣet, pramāyukaḥ syāt.*

[74] The text is obscure because of its conciseness.—*Cf.* Āp. 24.14.14. *Cf.* Āśvalāyana Śrautasūtra 1.7.6 and Śāṅkhāyana Śrautasūtra 1.10.7.

[75] *Cf.* Āp. 3.2.8.c.

[76] *Cf.* TS. 2.6.7.4: *daívyā adhvaryáva úpahūtā úpahūtā manuṣyā́ ity āha, devamanuṣyā́n evó 'pahvayate, yá imáṃ yajñám ávān yé yajñápatiṃ várdhān úty āha yajñā́ya cai 'vá yájamānāya cā "śíṣam ā́śāste.*

their bones, and some on account of their flesh.—And they say (i.e. some authorities say): "Verily, when he (the Adhvaryu) puts the sacrificial cake on the sacrificial grass (inside the *vedi*), these ones (i.e. the four parts of the cake) are secluded inside the *vedi* as the *dakṣiṇās* (the sacrificial fees) for the *haviryajña* (i.e. for the offering of the oblation of the cake)." He (the Adhvaryu) divides (the cake) into four parts, for the officiating priests of the *haviryajña* are four: the Brahmán, the Hotar, the Adhvaryu, and the Āgnīdhra. He (the Sacrificer) should touch (the four parts of) this (sacrificial cake), saying: "This is (the share) of the Brahmán; this, of the Hotar; this, of the Adhvaryu; this, of the Āgnīdhra." Just as, there, at the Soma festival, it is after they have been assigned to the officiating priests, that the *dakṣiṇās* are brought forward, just like that is that (which is done here).[77]

(*f*) He (the Adhvaryu) gives to the Āgnīdhra (his share) first. For success begins with Agni. (And consequently, when the Adhvaryu is doing thus,) the Sacrificer accomplishes the success that begins with Agni. Having poured out clarified butter once, in order to form a lower layer, he (the Adhvaryu) puts twice (a portion of the cake in the hand of the Āgnīdhra); and having poured (again) clarified butter in order to form a lower layer, he pours twice a libation of butter. This amounts to six (operations). Verily the Seasons are six. (Consequently, by doing so,) he gratifies the Seasons.

(*g*) By means of the *veda* (i.e. on the *veda*) he (the Adhvaryu) carries around to the Brahmán the share of the Brahmán.[78] Verily the *veda* is of Prajāpati's nature, and the Brahmán is of Prajāpati's nature. He is the impeller for the impulsion to be given to the sacrifice.—And by means of something else (i.e. not on the *veda*, but probably in a vessel), at will (the Adhvaryu brings to each of the others his share).[79] Then (he gives) to the Hotar (his share). Verily the Hotar is the middle of the sacrifice. (Consequently, by giving to the Hotar his share,) he gratifies the sacrifice in the middle. Then (he gives) to the Adhvaryu (i.e. to himself) (his share). Verily the Adhvaryu is the final support[80] of the sacrifice. Therefore it is according to this series of operations of the *haviryajña* that the other *dakṣiṇās* are brought (and distributed), for the final support of the sacrifice.

(*h*) (After the Adhvaryu has cooked the *anvāhārya* porridge, and the Sacrificer has given it as a sacrificial fee to the four priests, the Adhvaryu addresses the Āgnīdhra.) He (the Adhvaryu) says: "Agnīdh, sweep the fire (i.e. the three enclosing-sticks of the fire) once each.[81] For now the sacrifice is going away as it were.—(After the three *anuyājas* or after-offerings have been performed, and the enclosing-sticks and the *prastara* have been anointed, the Adhvaryu addresses the Hotar.) He (the Adhvaryu) says: "The divine Hotars are summoned —" (Thus he says) for it is after being summoned that the sacred work (i.e. the sacrifice) is performed. He says: "— for the auspicious proclamation; the human (Hotar) is summoned for the recitation of the good words (*sūktavāka*). Recite the good words." This he says as a prayer.

(*i*) (After the Adhvaryu has thrown the *prastara* into the Āhavanīya fire, the *śaṃyuvāka*, i.e. the invocation of health and wealth, takes place.) He (the Adhvaryu) says: "Svagā! (Hail!) to the divine Hotars!" By saying that, it is over the sacrifice indeed that he utters the holy exclamation *svagā*. He says: "Welfare to the human (Hotars)!" This he says as a prayer. (Then, addressing the Hotar,) he says: "Recite the *śaṃyoḥ* (i.e. the invocation of health and wealth)." (By saying that) he gives to Śaṃyu Bārhaspatya his share.[82]

3.3.9

(*a*) átha srúcāv anuṣṭúgbhyāṃ vājavatībhyāṃ vyūhati; pratiṣṭhā́ vā́ anuṣṭúk, ánnaṃ vā́jaḥ prátiṣṭhityai, annādyasyā́ 'varuddhyai; prā́cīṃ juhū́m ūhati, jātā́n evá bhrā́tṛvyān prā́ṇudate; pratī́cīm upabhṛ́tam, janiṣyámāṇān evá prátinudate; sá víṣūca evā́ 'póhya sapátnān yájamānaḥ, asmíṃ loké prátitiṣṭhati [1]; dvā́bhyām, dvípratiṣṭho hí.

(*b*) vásubhyas tvā rudrébhyas tvā "dityébhyas tvé 'ty āha; yathāyajúr evái 'tát; srukṣú prastarā́m anakti; imé vái lokā́ḥ srúcaḥ, yájamānaḥ

[77] *ādéśam* is an interesting example of the gerund in *am*.

[78] The meaning of this is that, in order to bring the Brahmán's share to the Brahmán, who sits on the southern side of the Āhavanīya fire, the Adhvaryu, coming from the western side of it, walks around, passing in front of it.

[79] This interpretation is doubtful because of the conciseness of the text.

[80] According to Sāyaṇa *pratiṣṭhā* here means *samāpti* (conclusion).

[81] *Cf.* note on 3.3.7.d.

[82] For the *mantras* of the *śaṃyuvāka* see Tait.-Br. 3.5.11.1 and 3.5.12.1. For the legend of Śaṃyu Bārhaspatya see TS. 2.6.10.

prastaráḥ; yájamānam evá téjasā 'nakti, tredhá 'nakti, tráya imé lokáḥ [2], ebhyá evái 'naṃ lokébhyo 'nakti, abhipūrvám anakti, abhipūrvám evá yájamānaṃ téjasā 'nakti; aktáṁ ríhāṇā íty āha, téjo vá ájyam, yájamānaḥ prastaráḥ, yájamānam evá téjasā 'nakti; viyántu váya íty āha, váya evái 'naṃ kṛtvá, suvargám lokáṃ gamayati [3]; prajáṃ yóniṃ má nírmṛkṣam íty āha, prajáyai gopīthāya; ápyāyantām ápa óṣadhaya íty āha, ápa eváu 'ṣadhīr ápyāyayati.

(*c*) marútāṃ pṛṣatayaḥ sthé 'ty āha, marúto vái vṛṣṭyā īśate, vṛṣṭim evá 'varundhe; dívaṃ gaccha táto no vṛṣṭim érayé 'ty āha, vṛṣṭir vái dyáuḥ, vṛṣṭim evá 'varundhe [4]; yávad vá adhvaryúḥ prastaráṃ prahárati, távad asyá "yur mīyate; āyuṣpá agne 'sy áyur me pāhí 'ty āha, áyur evá "tmán dhatte; yávad vá adhvaryúḥ prastaráṃ prahárati, távad asya cákṣur mīyate; cakṣuṣpá agne 'si cákṣur me pāhí 'ty āha, cákṣur evá "tmán dhatte.

(*d*) dhruvá 'sí 'ty āha prátiṣṭhityai; yáṃ paridhíṃ paryádhatthā íty āha [5], yathāyajúr evái 'tát, ágne deva paníbhir viyámāṇa íty āha, agnáya evái 'naṃ júṣṭaṃ karoti, táṃ ta etám ánu jóṣaṃ bharāmí 'ty āha, sajātán evá 'smā ánukān karoti, né 'd eṣá tvád apacetáyātā íty āhá 'nukhyātyai, yajñásya pátha úpa sámitam íty āha, bhūmánam evó 'paiti, paridhín práharati, yajñásya sámiṣṭyai [6].

(*e*) srúcau sáṃ prásrāvayati, yád evá tátra krūrám, tát téna śamayati; juhvàm upabhṛ́tam, yajamānadevatyā́ vái juhū́ḥ, bhrātṛvyadevatyò 'pabhṛ́t, yájamānāyai 'vá bhrātṛvyam úpastiṃ karoti; saṁsrāvábhāgāḥ sthé 'ty āha, vásavo vái rudrā́ ādityā́ḥ saṁsrāvábhāgāḥ, téṣāṃ tád bhāgadhéyam [7], tā́n evá téna prīṇāti; vaiśvadevyá rcā́, eté hí víśve devā́ḥ; triṣṭúg bhavati, indriyáṃ vái triṣṭúk, indriyám evá yájamāne dadhāti.

(*f*) agnér vām ápannagṛhasya sádasi sādayāmí 'ty āha, iyáṃ vā́ agnír ápannagṛhaḥ, asyā́ evái 'ne sádane sādayati; sumnā́ya sumninī́ sumné mā́ dhattam íty āha [8], prajā́ vái paśávaḥ sumnám, prajā́m evá paśū́n ātmán dhatte; dhurí dhuryàu pātam íty āha, jāyāpatyór gopīthā́ya.

(*g*) ágne 'dabdhāyo 'śītatano íty āha, yathāyajúr evái 'tát; pāhí mā 'dyá divā́ḥ pāhí prásityai pāhí dúriṣṭyai pāhí duradmanyái pāhí dúṣcaritād íty āha, āśíṣam evái 'tā́m āśā́ste; áviṣaṃ naḥ pitúṃ kṛṇu suṣádā yóniṁ svā́hé 'tī 'dhmasaṃvṛścanāny anvāhāryapácane 'bhyādhā́ya phalīkaraṇahomā́ṃ juhoti; átiriktāni vā́ idhmasaṃvṛścanāni [9], átiriktāḥ phalīkáraṇāḥ, átiriktam ājyoccheṣaṇā́m, átirikta evā́ 'tiriktaṃ dadhāti, átho átiriktenai 'vā́ 'tiriktam āptvā́ 'varundhe.

(*h*) védir devébhyo nílāyata, tā́ṃ vedéná 'nvavindan; vedéna védiṃ vividuḥ pṛthivíṃ, sā́ paprathe pṛthivī́ pā́rthivāni, gárbhaṃ bibharti bhúvaneṣv antáḥ, táto yajñó jāyate viśvadānír íti purástāt stambayajúṣo vedéna védiṁ sā́mmārṣṭy ánuvittyai [10]; átho yád vedáś ca védiś ca bhávataḥ, mithunatvā́ya prájātyai; prajā́pater vā́ etā́ni śmáśrūṇi, yád vedáḥ; pátniyā́ upástha āsyati, mithunám evá karoti, vindáte prajā́m.

(*i*) vedáṁ hótā" "havanīyāt sṭṛṇánn eti; yajñā́m evá tát sā́ṃtanoty ó 'ttarasmād ardhamāsā́t, táṁ sā́ṃtatam úttare 'rdhamāsá ā́labhate [11], táṃ kālé-kāla ā́gate yajate.

(*j*) brahmavādíno vadanti, sá tvā́ adhvaryúḥ syāt, yó yáto yajñā́ṃ prayuṅkté, tád enaṃ pratiṣṭhā́pāyatī 'ti; vā́tād vā́ adhvaryúr yajñā́ṃ práyuṅkte; dévā gātuvido gātúṃ vittvā́ gātúm ité 'ty āha; yáta evá yajñā́ṃ prayuṅkté, tád enaṃ prátiṣṭhāpayati; prátitiṣṭhati prajáyā paśúbhir yájamānaḥ [12].

[This chapter contains explanations referring to the following rites: the Adhvaryu separates the *juhū* and the *upabhṛt;* by means of the *juhū* he anoints the three enclosing-sticks; he anoints the *prastara;* he throws the *prastara* into the Āhavanīya fire; he touches the earth. While the Hotar recites the *śaṃyuvāka*, the Adhvaryu throws the enclosing-sticks into the Āhavanīya fire; he pours into the *juhū* the remainder of the oblation left in the *upabhṛt;* he pours the remainders of the oblation into the fire on the enclosing-sticks, and addresses the Viśve Devāḥ; he puts the *juhū* and the *upabhṛt* on the yoke of the cart; he offers, in the Dakṣiṇāgni, the chaff produced by the husking of the rice. The Hotar throws the *veda* in the lap of the Sacrificer's wife; strewing the grass-stems that compose the *veda*, the Hotar walks from the Gārhapatya to the Āhavanīya. The Adhvaryu offers to Vāta the oblation called *samiṣṭayajus.*]

(*a*) Then[83] he (the Adhvaryu) separates the two sacrificial spoons (i.e. the *juhū* and the *upabhṛt*) with the two Anuṣṭubh stanzas that contain the word *vāja* (strength).[84] Verily the

[83] According to Āpastamba and Baudhāyana the rite that consists in separating the two spoons and the rite that consists in anointing the enclosing-sticks and the *prastara* take place before the *sūktavāka.*

[84] These two stanzas are TS. 1.1.13.a–b: "With the impulse of strength, by elevation, Indra has lifted me up; then he has made my rivals lower by pressing them down.—

Anuṣṭubh is firm standing; (and) *vāja* (strength) is food for firm standing. It is in order to obtain food (for the Sacrificer) (that the Adhvaryu recites these two Anuṣṭubh stanzas). He moves the *juhū* forwards (i.e. eastwards). (By doing so) he pushes away the (Sacrificer's) present enemies. He moves the *upabhṛt* backwards (i.e. westwards). (By doing so) he pushes back the (Sacrificer's) future enemies. So the Sacrificer (by the interposition of the Adhvaryu) having pushed away his enemies on every side, is firmly established in this world. (The Adhvaryu separates the spoons) with two (stanzas), for he (the Sacrificer) is two-legged.

(*b*) (The Adhvaryu then sprinkles the *upabhṛt* with water, and puts it in its former place; then, by means of the *juhū*, he anoints the three enclosing-sticks of the fire, and doing so) he says: "To the Vasus thee, to the Rudras thee, to the Ādityas thee!"[85] This (i.e. the meaning of this) is according to the text of the formula.—(Then) he anoints the *prastara* in the (three) spoons. Verily the sacrificial spoons are these (three) worlds. (And) the *prastara* is (i.e. represents) the Sacrificer. (Consequently, by anointing the *prastara*,) he anoints the Sacrificer with fiery energy. He anoints it (i.e. the *prastara*) three times. These worlds are three. (Consequently, inasmuch as the Adhvaryu anoints the *prastara* three times,) he anoints him (i.e. the Sacrificer) for these (three) worlds. He anoints it (i.e. the *prastara*) in regular order (i.e. first the tip of it in the *juhū*, then the middle of it in the *upabhṛt*, and finally the lower part of it in the *dhruvā*). (Consequently) he anoints the Sacrificer with fiery energy (for the three worlds) in regular order. (As he thus anoints the *prastara* three times,) he says (first): "Licking the anointed one, —"[86] Verily clarified butter is fiery energy. (And) the *prastara* is (i.e. represents) the Sacrificer. (Consequently, by anointing the *prastara* with clarified butter, and by saying these words,) he (the Adhvaryu) anoints the Sacrificer with fiery energy. (And) he says: "— let the birds enjoy it."[87] (By saying that) he makes him (i.e. the Sacrificer) a bird, and makes him go to the heavenly world. (Second) he says: "May I not brush away offspring and its source."[88] Thus he says for the protection of the (Sacrificer's) offspring. (Thirdly) he says: "Let waters and plants swell."[89] (By saying that) he causes waters and plants to swell.

(*c*) (The Adhvaryu then throws the *prastara* into the Āhavanīya fire, and, addressing the grass-stems that constitute the *prastara*,) he says: "Ye are the spotted steeds of the Maruts."[90] Verily the Maruts are masters of the rain. (Consequently, by saying that,) he obtains rain (for the Sacrificer). He says: "Go to the sky; thence bring us rain."[91] Verily the sky is rain. (Consequently, by saying that,) he obtains rain.—Verily, as far as the Adhvaryu throws the *prastara*, so far his life is diminished. (Therefore) he says: "Thou art the protector of life, O Agni, protect my life."[92] (By saying that) he puts life in himself.—Verily, as far as the Adhvaryu throws the *prastara*, so far his faculty of seeing is diminished. (Therefore) he says: "Thou art the protector of the eye, O Agni, protect my eye."[93] (By saying that) he puts the faculty of seeing in himself.

(*d*) (Touching the earth inside the *vedi*) he (the Adhvaryu) says: "Thou art firm."[94] (He says that) in order to obtain a firm stand (for the Sacrificer). (Then, while the Hotar recites the *śaṃyuvāka*, the Adhvaryu throws the enclosing-sticks into the Āhavanīya fire.) (Throwing the middle one,) he says: "The fence which thou didst put around thee, —"[95] This (i.e. the meaning of this) is according to the text of the formula. He says: "— when, O god Agni, thou wast beset by the Paṇis, —"[96] (By saying that) he makes that (fence) agreeable to Agni. He says: "— that do I bring here to thee according to thy wish."[97] (By saying that) he makes the kinsmen (of the Sacrificer) subordinate to him. He says: "It should not divert its thought from thee (it should not abandon thee)."[98] (Thus he says) for the revealing (of the fire by the enclosing-stick [?]). (Throwing the two other enclosing-sticks into the fire) he says: "Go ye two together to the place of the sacrifice (i.e. there where the

By elevation and by pressing down, the gods have increased the Bráhman (the holy power of the sacred word); then Indra and Agni have scattered my rivals on every side."

[85] TS. 1.1.13.c.
[86] TS. 1.1.13.d.
[87] TS. *ibidem*.
[88] TS. 1.1.13.e.
[89] TS. 1.1.13.f.
[90] TS. 1.1.13.g.
[91] TS. 1.1.13.h.
[92] TS. 1.1.13.i.
[93] TS. 1.1.13.k.
[94] TS. 1.1.13.l.
[95] TS. 1.1.13.m.
[96] TS. *ibidem*.
[97] TS. *ibidem*.
[98] TS. *ibidem*.

sacrifice goes)."[99] (By saying that) he obtains wealth (for the Sacrificer). He throws the (three) enclosing-sticks (into the fire) for the completion of the sacrifice.

(*e*) (Then) he causes the two spoons to shed together the remainders of the oblation (into the fire). By doing that he appeases whatever cruelty there is there. (First, he pours out the remainder left in) the *upabhṛt* into the *juhū*. Verily the *juhū* has the Sacrificer as its deity; the *upabhṛt* has his rival as its deity. (Consequently, by pouring the remainder left in the *upabhṛt* into the *juhū*,) he (the Adhvaryu) makes the (Sacrificer's) rival submissive to the Sacrificer. (Then,) pouring the remainders of the oblation into the fire, on the enclosing-sticks,) he says (addressing the Viśve Devāḥ): "You are the sharers in the remainders of the oblation [, the gods (who are) strong by the invigorating sap (of the oblation), (who are) sitting on the *prastara*, (who are) sitting on the sacrificial strew. Accepting these words, do ye all, seated on the strew, enjoy yourselves]."[100] Verily the sharers of the remainders are the Vasus, the Rudras, and the Ādityas. The remainders are their share. (Consequently) by that (i.e. by offering them the remainders of the oblation, and by uttering that formula,) it is these indeed he gratifies. (He addresses them with a stanza which (inasmuch as it contains the word *viśve* and the word *devāḥ*) is sacred to the Viśve Devāḥ. For these ones (the Vasus, the Rudras, and the Ādityas) are the Viśve Devāḥ (the All-Gods). It is a Triṣṭubh stanza. Verily the Triṣṭubh (which is sacred to Indra) is manly power (*indriyam*). (By the fact that he recites a Triṣṭubh stanza) he (the Adhvaryu) puts manly power into the Sacrificer.

(*f*) (Being about to perform the *patnīsaṃyājas*, which consist in an offering to Soma, an offering to Tvaṣṭar, an offering to the wives of the gods, and an offering to Agni Gṛhapati, the Adhvaryu, the Hotar, and the Āgnīdhra betake themselves to the Gārhapatya fire.) (The Adhvaryu then puts the *juhū* and the *upabhṛt* on the yoke of the cart which stands behind the Gārhapatya, and, doing that,) he says: "I set you both in the seat of Agni (the Fire), whose abode is firm."[101] Verily Agni (the Fire) whose abode is firm is this (earth). (Consequently) it is in the seat of this (earth) that he sets these two (spoons). He says: "For cheerfulness, O ye two cheerful ones, place me in cheerfulness."[102] Verily cheerfulness is offspring and cattle. (Consequently, by the fact that the Adhvaryu, speaking for the Sacrificer, utters these words,) he (the Sacrificer) bestows on himself offspring and cattle. (Addressing the two spoons) he (the Adhvaryu) says: "At the yoke, protect ye two the two who bear the yoke."[103] Thus he says for the protection of the husband and his wife.

(*g*) (After the *patnīsaṃyājas* have been performed, the Adhvaryu offers, in the Dakṣiṇāgni, the chaff produced by the husking of the rice, and) he says: "O Agni, whose life is unhurt, whose body is never cold, —"[104] This (i.e. the meaning of this) is according to the text of the formula. (Speaking for the Sacrificer,) he says: "— protect me today from the sky, protect (me) from bondage, protect (me) from error in the sacrifice, protect (me) from bad food, protect (me) from ill deed."[105] This he says as a prayer. He says: "Make our drink free from poison, (make for us) a resting place with a pleasant seat.[106] Svāhā!"[107] With these words, he (the Adhvaryu), having put the splinters of the kindling-sticks on the Anvāhāryapacana (i.e. the Dakṣiṇāgni or southern fire), offers (there) the oblation of the chaff. Verily the splinters of the kindling-sticks are a surplus, (and) the chaff (produced by the husking of the rice) is a surplus, (and) the remainder of the clarified butter is a surplus. (Consequently, when the Adhvaryu offers that oblation of the chaff in the Dakṣiṇāgni, on the splinters that have been first put in the clarified butter,) he puts a surplus into a surplus, and having obtained a surplus (of reward) by a surplus (of oblation), he takes possession of it.

(*h*) [After the offering of the chaff, the Adhvaryu offers a libation of clarified butter to Sarasvatī (*cf.* Āp. 3.10.2). After that the Hotar throws the *veda* in the lap of the Sacrificer's wife.—Being about to speak of that rite, the author of the Brāhmaṇa mentions another rite that concerns the *veda* and that has been per-

[99] TS. 1.1.13.n.
[100] TS. 1.1.13.o.
[101] TS. 1.1.13.p.
[102] TS. 1.1.13.q.
[103] TS. 1.1.13.r.
[104] TS. 1.1.13.s.
[105] TS. *ibidem*.
[106] The meaning of *suṣádā yónim* is doubtful. Keith supposes that the reading must be *suṣádāṃ yónim*, and translates: "the lap pleasant to sit in." But if *suṣádāṃ yónim* was the original reading, it seems difficult to explain why it was changed. Caland's translation "durch guten Sitz, den Schoss" is not clear.
[107] TS. 1.1.13.t.

formed before the *stambayajus* ceremony (*cf.* Āp. 2.1.3). And he begins his explanation of this rite by saying:]

(Formerly) the *vedi* hid itself from the gods. By means of the *veda* they discovered it. (And it is said in a Triṣṭubh stanza:) "By means of the *veda* they found the *vedi*, the Earth. This one, the Earth, extended the earthly things. Inside the creatures she bears the fetus. From that the all-giving Sacrifice is born." With this formula he (the Adhvaryu), before the *stambayajus* ceremony, touches the *vedi* with the *veda*. It is for the finding (i.e. in order to find the *vedi*) (that he says this formula). And since the two are the *veda* (which, being masculine, is a male,) and the *vedi* (which, being feminine, is a female,) it is for copulation, for procreation (that this rite that consists in touching the *vedi* with the *veda* is performed).—(After the libation to Sarasvatī, the Hotar throws the *veda* in the lap of the Sacrificer's wife.) Verily that which is the *veda* is the beard of Prajāpati. He (the Hotar) throws it in the lap of the Sacrificer's wife. (Consequently) he produces copulation. (And consequently) he obtains progeny (for the Sacrificer).

(*i*) The Hotar (then), strewing the *veda* (i.e. the grass-stems that compose the *veda*), walks (from the Gārhapatya) as far as the Āhavanīya fire. By doing so he extends the sacrifice as far as the following fortnight; (and) he (the Sacrificer) takes hold of that extended (sacrifice) in the following fortnight; (and) again and again, when the right time has come, he offers that (sacrifice).

(*j*) [The Adhvaryu then, standing inside the *vedi*, offers to Vāta (the wind-god) the oblation called *samiṣṭayajus* (the oblation with the formula that marks the completion of the sacrifice).] The expounders of the Veda say: "That one is verily an Adhvaryu who concludes the sacrifice there where he puts it in motion." Certainly the Adhvaryu puts it in motion from the wind.[108] (Now) he says: "O ye gods who know the way, having found the way, go ye the way (back). [O lord of mind, this sacrifice for us place among the gods, O god, svāhā!—in speech, svāhā!—in the wind, svāhā!"][109] With this formula he brings that (sacrifice) to a firmly established conclusion just there where he put it in motion. (And consequently) he (the Sacrificer) is firmly established (i.e. prospers) with offspring and cattle.

[108] *Cf.* Āp. 1.1.4 and Tait.-Br. 3.7.4.1.

[109] TS. 1.1.13.u–v.

3.3.10

(*a*) yó vā́ áyathādevataṃ yajñám upacárati, ā́ devátābhyo vṛścyate, pā́pīyān bhavati; yó yathādevatám, ná devátābhya ávṛścyate, vásīyān bhavati; vāruṇo vái pā́śaḥ; imā́ṃ víṣyāmi vāruṇasya pā́śam íty āha; varuṇapāśā́d evái 'nāṃ muñcati; savitṛ́prasūto yathādevatám [1], ná devátābhya ávṛścyate, vásīyān bhavati.

(*b*) dhātúś ca yónau sukṛ́tasya loká íty āha, agnír vái dhātā́, púṇyaṃ kárma sukṛ́tasya lokáḥ, agnír evái 'nāṃ dhātā́ púṇye kármaṇi sukṛ́tasya loké dadhāti; syonā́ṃ me sahá pátyā karomí 'ty āha, ātmánaś ca yájamānasya cánātyai (*corr.*: cā́ 'nāttyai ?) saṃtvā́ya; sā́m āyuṣā́ sā́m prajáyé 'ty āha [2], āśíṣam evái 'tā́m áśāste pūrṇapātré; antató 'nuṣṭúbhā, cátuṣpad vā́ etác chándaḥ prátiṣṭhitaṃ pátniyai pūrṇapātré bhavati; asmíṁ loké prátitiṣṭhānī 'ti, asmínn evá loké prátitiṣṭhati; átho vā́g vā́ anuṣṭúk, vā́n mithunám, ā́po rétaḥ prajánanam, etásmād vái mithunā́d vidyótamānas tanáyan varṣati, rétaḥ siñcán [3], prajā́ḥ prajanáyan.

(*c*) yád vái yajñásya bráhmaṇā yujyáte, bráhmaṇā vái tásya vimokáḥ; adbhíḥ śā́ntiḥ; vímuktaṃ vā́ etárhi yóktraṃ bráhmaṇā; ādā́yai 'nat pátnī sahā́ 'pá úpagṛhṇīte śā́ntyai; añjaláu pūrṇapātrám ā́nayati, réta evā́ 'syā́ṃ prajā́ṃ dadhāti, prajáyā hí manuṣyàḥ pūrṇáḥ; múkhaṃ vímṛṣṭe, avabhṛthásyai 'vá rūpā́ṃ kṛtvó 'ttiṣṭhati [4].

[This chapter contains ritual and theological explanations referring to the rite that consists in loosening the cord with which the Sacrificer's wife has been girded (*cf.* 3.3.3.a–c). According to Āpastamba, this rite takes place after the libation to Sarasvatī, but before the *samiṣṭayajus* ceremony. After the loosening of the cord, the Hotar pours water into the joined and hollowed hands of the Sacrificer's wife.]

(*a*) Verily he who performs the sacrifice not according to each deity, is separated from the deities; he becomes worse; (but) he who (performs the sacrifice) according to each deity, is not separated from the deities; he becomes better.—Verily the bond (that binds the Sacrificer's wife) is (the bond) of Varuṇa. He (the Adhvaryu, speaking for the Sacrificer's wife,) says: "I loosen this bond of Varuṇa [which Savitar the benevolent has bound]."[110] (By saying that) it is indeed from the bond of Varuṇa that he liberates her. (And by the fact that he utters that formula, in which the names of the

[110] TS. 1.1.10.g.

two deities Varuṇa and Savitar are mentioned, the Adhvaryu,) being impelled by Savitar, (performs the sacrifice) according to each deity. (And consequently) he (the Sacrificer, for whom the Adhvaryu performs the sacrifice,) is not separated from the deities; he becomes better.

(*b*) (And) he (the Adhvaryu, speaking for the Sacrificer's wife,) says: "And, in the home of the creator, in the place of good action, —"[111] Verily the creator is Agni. (And) the place of good action is holy work. (Consequently) it is Agni, the creator, who puts her (the Sacrificer's wife) in the holy work, in the place of good action.—(Speaking for her) he (the Adhvaryu) says: "—I make a soft couch for me with my husband."[112] (Thus she says, by the intermission of the Adhvaryu,) for the non-separation, for the union, of herself and the Sacrificer.[113]—(Speaking for her) he (the Adhvaryu) says: "With life, with offspring [, O Agni, with vital power, again, as wife with my husband I am united. United is the spirit with my body]."[114] (Speaking for her,) he says that as a prayer over the full vessel (of water) (that has been prepared for the performance of the rite). Finally (he recites) an Anuṣṭubh stanza (i.e.: the last formula is an Anuṣṭubh stanza). Verily this metre, which is four-footed (since it has four *pādas*), is (because of that) firmly established on the full vessel of the Sacrificer's wife. (Speaking for her) he (the Adhvaryu) says: "May I be firmly established in this world." (Consequently) she is firmly established in this world. And verily the Anuṣṭubh is voice; (and) voice is copulation; (and) water is seed, (and) procreation. (Consequently, inasmuch as this Anuṣṭubh stanza is recited while water is poured by the Hotar in the joined and hollowed hands of the Sacrificer's wife, who holds the cord with which she had been girded and which has just been loosened,)—because of that copulation, he (the god of rain), flashing and thundering, sheds rain, emitting the seed, and procreating offspring.[115]

(*c*) Verily the unbinding of that which, in the sacrifice, is bound with a sacred formula, is (effected) with a sacred formula. (Consequently, the cord with which the Sacrificer's wife has been girded with a sacred formula, must be loosened with a sacred formula.) (On the other hand,) appeasement (of the pain possibly caused by the cord) is effected by water. The cord now has been loosened with a sacred formula. Having taken it (in her hands), the Sacrificer's wife, along with that, takes hold of the water, for appeasement. He (the Hotar) pours out into her joined and hollowed hands the full vessel (of water). It is seed and offspring that (doing so) he puts in her. For it is by offspring that man is (made) complete. Having thus made an imitation of the final bath of purification, she stands up.

3.3.11

(*a*) pariveṣó vā eṣá vánaspátīnām, yád upaveṣáḥ; yá evám véda, vindáte pariveṣṭáram; tám utkaré, yáṃ devā́ manuṣyèṣu, upaveṣám ádhārayan, yé asmád ápacetasaḥ, tā́n asmábhyam ihā́ 'kuru, úpaveṣó 'paviḍḍhi naḥ [1], prajā́ṃ púṣṭim átho dhánam, dvipádo naś cátuṣpadaḥ, dhruvā́n ánapagān kurv íti purástāt pratyáñcam úpagūhati; tásmāt purástāt pratyáñcaḥ śūdrā́ ávasyanti; sthavimatá úpagūhati, áprativādina evái 'nān kurute.

(*b*) dhŕṣṭir vā́ upaveṣáḥ; śucá rtó vájro bráhmaṇā sáṁśitaḥ; yó 'paveṣé śúk, sā́ 'múm ṛcchatu

[111] TS. *ibidem*.

[112] TS. *ibidem*.

[113] The interpretation of this sentence is difficult because the text is not well established. The reading of the Ānandāśrama edition is *ātmánaś ca yájamānasya cā́nātyai saṃtvā́ya*. The reading of the edition of the Bibliotheca Indica is the same with the exception of *santvā́ya* instead of *saṃtvā́ya*. The reading of Sāyaṇa, in his commentary, is the same with the exception of *śantvā́ya* instead of *santvā́ya*.—*ánātyai* seems impossible. If, instead of *ánātyai*, we should read *ánārtyai* and should accept the reading of Sāyaṇa *śantvā́ya* (= *śaṃtvā́ya*), we might translate: "for the painlessness, for the happiness, of myself and the Sacrificer." But, according to the Vaidika-Padānukramakośa of Viśvabandhu Śāstrī (the Brāhmaṇas and the Āraṇyakas), we should read *ánāttyai* and *saṃtvā́ya*, and *ánātti*, being analyzed: *án-ā-tti*, should be considered as derived from the root *dā* "to divide," "to separate." If we accept that reading, we may translate: "for the non-separation, for the union, of myself and the Sacrificer." In the context, that would certainly be better than "for the painlessness, for the happiness. . . ." The word *saṃtvá* is a hapax legomenon, but it probably means "union"; and if *saṃtvá* means "union," it is probable that the preceding word is a synonym of "union." On the other hand, *án-ā-tti*, meaning "non-division," "non-separation," is quite possible; but it is also a hapax legomenon, and consequently its meaning, as well as its derivation, is uncertain.

[114] TS. 1.1.10.h.

[115] Originally the formulas of TS. 1.1.10.g and h were certainly recited by the Sacrificer's wife. If we consider, however, that *savitṛ́prasūtaḥ* is a nominative masculine, and that the subject of *varuṇapāśā́d evái 'nāṃ muñcati* apparently cannot be *patnī* understood, it seems certain that, in the opinion of the author of the Brāhmaṇa, these formulas were to be recited not by the Sacrificer's wife herself, but by a priest (probably the Adhvaryu) speaking for her.

yáṃ dviṣmá íti [2]; áthā 'smai nāmagṛhya práharati, nír amúṃ nuda ókasaḥ, sapátno yáḥ pṛtanyáti; nirbādhyèna havíṣā, índra eṇaṃ párāśarīt; ihí tisráḥ parāvátaḥ, ihí páñca jánāṁ áti, ihí tisró 'ti rocanā́, yā́vat sū́ryo ásad diví; paramā́ṃ tvā parāvátam [3], índro nayatu vṛtrahā́, yáto ná púnar āyasi, śaśvatībhyaḥ sámābhya íti.

(*c*) trivṛ́d vā́ eṣá vájro bráhmaṇā sáṁśitaḥ; śucái 'vái 'naṃ viddhvā́, ebhyó lokébhyo nirṇúdya, vájreṇa bráhmaṇā stṛṇute; ható 'sā́v ávadhiṣmā 'múm íty āha stṛtyai; yáṃ dviṣyā́t táṃ dhyāyet, śucái 'vái 'nam arpayati [4].

[This chapter contains ritual and theological explanations referring to the following rite: the Adhvaryu hides the poking-stick in the *utkara* (i.e. the heap of rubbish that lies on the north side of the sacrificial ground). This rite takes place after the *samiṣṭayajus* ceremony.]

(*a*) Verily the poking-stick (which is made of a branch of the *pālāśa* tree) is (i.e. symbolizes) the service of the trees (at the sacrifice) (for it represents the trees). He who thus knows obtains a servant. (The Adhvaryu says:) "Thou, the poking-stick, whom the gods have established among men, do thou bring hither those who are averse to us. O poking-stick, do thou perform service to us. Do thou cause offspring, prosperity and wealth, the two-footed ones (i.e. men) and the four-footed ones (i.e. cattle) to stay with us and not depart." With these words he (the Adhvaryu) hides it (i.e. the poking-stick) in the *utkara* from in front (i.e. from the east) towards the west. That is the reason why the Śūdras (the servants) take their standing place in front (of their master), facing (him). He hides it (i.e. the poking-stick) with the thick end (first). (By doing so) he makes them (i.e. the Śūdras) not contradicting (i.e. submissive).

(*b*) Bold, indeed, is the poking-stick. Having been afflicted by the heat (the pain caused by the fire), it is a thunderbolt sharpened by the sacred formula. (If the Sacrificer wants to harm his enemy, the Adhvaryu, speaking for the Sacrificer, should say:) "Let that heat (that pain) which is in the poking-stick, go to that so and so whom we hate." And naming that so and so (i.e. replacing the words so and so by the name of the Sacrificer's enemy) he (the Adhvaryu) throws (that heat which is in the poking-stick) at that one (i.e. the Sacrificer's enemy). He says: "I expel that so and so from his home, the rival who fights us. By means of the oblation that has the power to expel, Indra has crushed him.—Go to the three distances; go away beyond the five peoples; go away beyond the three luminous spheres,—so long as the sun will be in the sky.—Let Indra, the slayer of Vṛtra, lead thee to the farthest distance, from which thou shalt not come back, for endless years."[116]

(*c*) Verily, this thunderbolt, which has been sharpened by the sacred formula, is threefold. (Consequently, by uttering that formula,) he (the Adhvaryu, acting for the Sacrificer,) having affected that one (i.e. the Sacrificer's enemy) with pain, expels him from these (three) worlds, and overthrows him by means of that thunderbolt, by means of that sacred formula. "That so and so has been slain; we have slain that so and so." Thus he says in order to overthrow him. (And saying that,) he should think of him whom he (the Sacrificer) hates. (And by saying that) he (the Adhvaryu) gives him pain.

[116] *Cf.* Atharva Veda 6.75.

POSTSCRIPT

In a private letter Professor Edgerton has drawn my attention to some misprints and mistakes in my paper: The Full-Moon and New-Moon Sacrifices in the Taittirīya-Brāhmaṇa (First Part) (*Proc. Amer. Philos. Soc.* **102** (2): 216–243, 1957).

The following misprints and mistakes should be corrected:

p. 219, col. a, line 3: *śréṣṭhamāya;* corr.: *śréṣṭhatamāya.*

p. 220, col. a, line 42: *vitaṣṭhé;* corr.: *vitaṣṭé.*

p. 220, col. b, line 31: *puṣá;* corr.: *pūṣá.*

p. 221, col. b, line 2: The translation of *rákṣasām ápahatyai* has been omitted and should be added: (Thus he says) in order to ward off the Rakṣases.

p. 226, col. a, line 13: Corr.: He says: "(Be united,) delightful, for the acquisition of wealth."—*mandrá* is not a vocative.

p. 227, col. a, line 10: *cathurtám;* corr.: *caturthám.*

p. 228, col. b, line 19: The translation of *gúptyai* has been omitted and should be added: (Thus he says) for protection.
p. 231, col. b, line 41: The Rakṣases attacked the sacrifice. Corr.: The Rakṣases penetrated into the sacrifice.
p. 232, col. a, line 44: *paravatír;* corr.: *parvatír.*
p. 236, col. b, line 23: over these (grains); corr.: over this (earth).
p. 238, col. a, footnote, line 6: *mŕyate;* corr.: *mriyáte.*
p. 239, col. a, line 20: *kyáṃ no;* corr.: *kyàn no.—kyàn = kyàt = kíyat.*
p. 241, col. a, line 11: What will you give to us? Corr.: How much will you give to us?
p. 241, col. b, line 19: he drives away the Rakṣases. Corr.: he drives away the Rakṣases from the sacrifice.

ADDITIONAL NOTES ON THE TRANSLATION OF TAIT.-BR. 3.2

3.2.2.g (p. 222):

"May this not hurt thee."—Professor Edgerton objects to this translation of the formula *sá te má "sthād* because he does not find any evidence that *ā-sthā* may mean "to hurt," and he thinks that Keith's translation "that (knot) shall mount me" is much more likely. I want to maintain my translation for the following reasons. *má "sthād* may be for *mā ásthād* but may be also for *má ásthād*. Caland translated: "Nicht treffe dieser dich." Keith did not translate *te*. It is true that *ā-sthā* means "to mount, to ascend, to step into"; but I think that "to befall, to fall upon, to hurt" is a secondary meaning. According to BR, *āsthitam* means "was krank ist" (*cf.* AV. 6.14.1), and Whitney translated *tena te mṛjma āsthitam* (AV. 4.17.8) "with it we wipe off what has befallen thee." Furthermore, according to BR, the causative of *ā-sthā* means "Jemandem (gen.) Etwas antun." *Cf.* RV. 1.162.20: *má svádhitis tanvá á tiṣṭhipat te:* "Nicht soll das Beil deinem Körper dauernden Schaden tun" (Geldner). *Cf.* Śat.-Br. 3.8.2.8: *tad yat krūrīkurvanti, yad āsthāpayanti . . .*: "Thus wherever they wound it, wherever they hurt it . . ." (Eggeling). I think that it is very probable that *ā-tiṣṭhati* sometimes had the same secondary meaning as the causative. *Cf.* the meaning of the participle *ā-sthitam*. On the other hand, the explanation of the Brāhmaṇa, *áhiṁsāyai*, seems to indicate that the author of the Brāhmaṇa understood the *mā* of the formula in the sense of the negative particle.

3.2.3.f (p. 225):

"He (the Adhvaryu) asks (the man who has milked the cow)."—As it has just been said that the Adhvaryu remains silent (at the time of milking), and as it is later said that he breaks silence by saying: "Do milk an abundant oblation for Indra," Professor Edgerton suggests that it is not the Adhvaryu, but the Sacrificer or the Āgnīdhra, who asks the milker. There is no doubt, however, that, according to Sāyaṇa's commentary on Tait.-Br. 3.7.4.16 and according to Rudradatta's commentary on Āp. 1.13.3, it is the Adhvaryu who asks the milker. I think that the words addressed to the milker by the Adhvaryu on this occasion were not considered as profane, and that consequently, according to the ritual rule, the Adhvaryu, by uttering them, was not breaking the *vāgyamana*.

3.2.8.d (p. 237, col. b):

"He makes the injunction."—This translation of *purorúcaṃ karoti* is too free. "He pronounces the *puroruc* formula" would be better. In this case, however, the *puroruc* formula "Do ye bake it without burning it" is an injunction.

3.2.8.e (p. 237, col. b, line 42):

"and the ashes are (i.e. represent) his offspring and his cattle."—*purīṣa* means "rubble, loose earth," but, according to the context, the word here certainly designates the ashes with which the Adhvaryu covers the cake, which represents the Sacrificer.

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